



Food habits of a Chinese immigrant population living in Portugal

Yuzhu Li

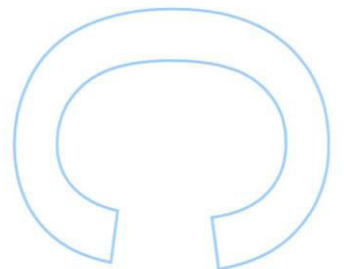
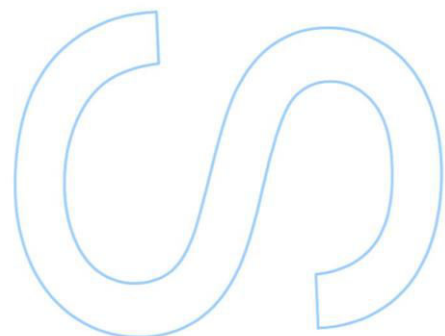
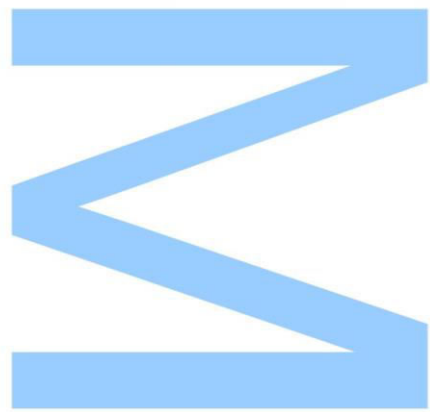
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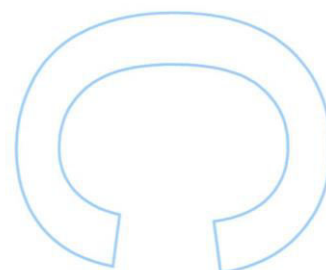
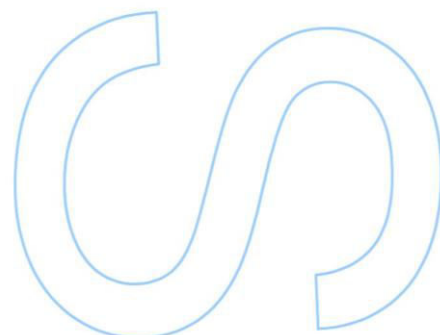
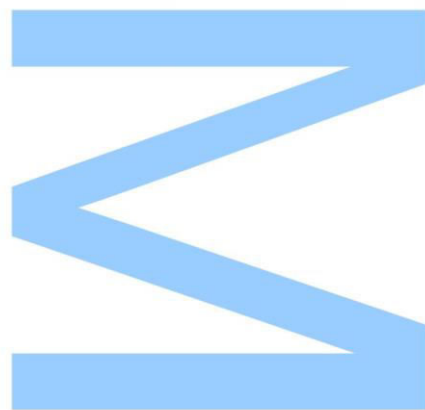
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do Porto

Porto, July 2015

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Abstract

Background

Emigration is defined as the behavior of leaving one's homeland or country with the intention to work either settling down permanently or temporarily in another country [1]. The Chinese emigration history experiences a development of thousand years. Nowadays, the globalization and global consciousness have contributed to a high level of migration influenced by economic and political factors. Accordingly, the number of Chinese people moving out from China to other countries experienced a substantial growth and Chinese immigrant population has become one of the fastest growing populations overseas [2]. Under this circumstance, Chinese immigrants face many challenges and need to adapt the new environment and to a different culture. Besides, the diet pattern influences directly the health status of immigrants. Portugal is a country in southern Europe, whose diet pattern is considered to be Mediterranean, therefore a healthful and nutritional diet. In addition, Portugal is a gastronomy-loving nation, and enjoying delicious food is an essential part of the people's daily life. The Chinese notion "food is the paramount necessity of the people" happens to coincide with the Portuguese one. To our best knowledge the food habits of Chinese immigrants in Portugal have never been investigated and therefore constitute my research topic.

Results

Food habits change has been assessed by the means of a frequency of consumption questionnaire. For several Portuguese typical dishes, the consumption frequency has a linear relationship with five main parameters: age, length of residence in Portugal, education level, length of residence of their spouse in Portugal and degree of self-reported integration in Portuguese society. For Chinese typical dishes, the consumption of soup, starters (Wined chicken and Jellyfish salad), all the traditional Chinese main dishes, staple food (excluding steamed rice), however, were differently consumed before and after migration. Moreover, an increased frequency of consumption is observed for bread, boiled potato, fried chips, yoghurt, milk, meat (white and red), olive oil, lemon, cherry, orange, milk and chocolate desserts, wine, natural juice and coffee. Based on the results of daily food intake, sleeping time of Chinese immigrants after immigration has reduced sharply and as a consequence meal time is postponed around one hour and an increase in the average number of daily meals from 3.2 in China to 3.7 in

Portugal. Around 40% of the Chinese immigrants have Portuguese style lunch and prefer to eat snacks during coffee break.

Key words: Chinese immigrants, Portugal, food intake, food habits, integration, satisfaction

Resumo

Entende-se por emigração o comportamento de deixar a terra natal ou o país com a intenção de trabalhar, quer de forma permanente ou temporária em outro país. A história da emigração chinesa regista um desenvolvimento de milénios. Hoje em dia, a globalização e a consciência global têm contribuído para um nível elevado de migração influenciada por fatores económicos e políticos. Consequentemente, o número de chineses que se deslocam para outros países cresceu substancialment e a população chinesa imigrante tornou-se uma das populações que mais crescem no estrangeiro. Nessa circunstância, os imigrantes chineses enfrentam muitos desafios e precisam de se adaptar ao novo ambiente e a culturas diferentes. Além disso, o padrão alimentar influencia diretamente o estado de saúde dos imigrantes. Portugal é um país do sul da Europa, cuja dieta é considerada Mediterrânica, e portanto saudável e nutritiva. Além disso, Portugal é uma nação amante da gastronomia, e desfrutar de comida e deliciosa é uma parte essencial da vida diária das pessoas. A noção chinesa "comida é a necessidade primordial do povo" coincide com a Portuguesa. Tanto quanto é do nosso conhecimento, os hábitos alimentares dos imigrantes chineses em Portugal nunca foram investigados e, portanto, constituem o meu tema de investigação.

Resultados

A mudança de hábitos alimentares foi avaliada por meio de um questionário de frequência de consumo. No caso de vários pratos típicos portugueses, a frequência de consumo tem uma relação linear com cinco parâmetros principais: idade, tempo de residência em Portugal, escolaridade, tempo de residência do cônjuge em Portugal e grau de integração na sociedade Portuguesa. No caso de pratos típicos chineses, o consumo de sopa, entradas (frango com vinho e salada de medusa), todos os pratos principais tradicionais chineses, alimentos básicos (excluindo arroz cozido em vapor), no entanto, são consumidos com uma frequência significativa diferente nos pedidos antes da imigração e depois da emigração. Por outro lado, observa-se aumento do consumo

de pão, batata cozida, batatas fritas, iogurte, leite, carnes (brancas e vermelhas), azeite, limão, cereja, laranja, leite e chocolate de sobremesa, vinho, sumo natural e café. Baseado nos resultados da ingestão diária de alimentos, verifica-se uma redução das horas de sono depois da imigração e a hora das refeições é adiado cerca de uma hora. O número médio de refeições diárias aumenta ligeiramente, passando de 3,2 na China para 3,7 em Portugal. Cerca de 40% dos imigrantes chineses almoça tipo Português e prefere comer lanches.

Palavras-chave: imigrantes chineses, Portugal, ingestão de alimentos, hábitos alimentares, integração, satisfação

Contents

Acknowledgements	2
Abstract	
Background	4
Results	4
List of Figures.....	9
List of Tables.....	11
Introduction	12
Literature Review.....	12
History of emigration.....	14
Objectives.....	18
Research methodology	18
Sample collection procedure.....	18
Methods of data collection	19
Data analysis	20
Results	
Personal characteristics and food habits.....	21
Analysis of Portuguese typical dishes consumption	49
Analysis of Chinese typical dishes consumption	50
Analysis of specific food consumption.....	55
Daily food intake	61
Discussion.....	63
Typical Chinese dishes	63
Grain products	65
Dairy products	65
Egg, meat and fish group.....	65
Oils and fats.....	66
Vegetables.....	66
Fruits	67

Sweets and cakes.....	68
Drinks	70
Conclusions.....	74
Future Research	75
References.....	76
Appendix 1 Questionnaires in English version.....	79
Appendix 1.1 Questionnaire of personal characteristics and food habits.....	79
Appendix 1.2 Food frequency questionnaires	84
Appendix 1.3 Questionnaires of consumption frequency of Portuguese and Chinese typical dishes	98
Appendix 1.4 Questionnaires of daily food intake	105
Appendix 2 Questionnaires in Chinese version	107
Appendix 2.1 Questionnaire of personal characteristics and food habits.....	107
Appendix 2.2 Food frequency questionnaires	111
Appendix 2.3 Questionnaires of consumption frequency of Portuguese and Chinese typical dishes	119
Appendix 2.4 Questionnaires of daily food intake	122
Appendix 3 Glossary of Typical Portuguese and Chinese Cuisine.....	125

List of Figures

Fig. 1 - Statistics of the overseas Chinese population (1990-2013) (Unit: Ten thousand)	14
Fig. 2 - Statistics of overseas Chinese in Portugal, in Porto and in Lisbon	17
Fig. 3 - Statistics of immigrant populations in Portugal (Porto, Lisbon) (2008-2013) (Unit: Ten thousand)	17
Fig. 4 - Relationship between "Whether came alone to Portugal" and "Sex"	25
Fig. 5 - Relationship between "come alone to Portugal" and "Age"	26
Fig. 6 - Relationship between "Degree of self-reported integration in Portuguese society" and "Sex"	27
Fig. 7 - Relationship between "Degree of self-reported integration in Portuguese" and "Age"	29
Fig. 8 - Relationship between "Portuguese language skills" and "Sex"	30
Fig. 9 - Relationship between "Portuguese language skills" and "Age"	31
Fig. 10 Relationship between "Portuguese language skills" and "Length of residence"	32
Fig. 11 - Relationship between "Length of residence in Portugal" and "Education degree"	33
Fig. 12 - Relationship between "Degree of satisfaction of present life in Portugal" and "Age"	34
Fig. 13 - Relationship between "Degree of satisfaction" and "Health status"	35
Fig. 14 - Relationship between "Degree of satisfaction of present life in Portugal" and "Length of residence in Portugal"	36
Fig. 15 - Relationship between "Frequency of eating out per week" and "Age"	37
Fig. 16 - Places of dining out	37
Fig. 17 - Relationship between "Change in body weight" and "Sex"	38
Fig. 18 - Relationship between "Change in body weight" and "Length of residence in Portugal"	39
Fig. 19 - Relationship between "Change of economic situation" and "Age"	40
Fig. 20 - Relationship between "Change of economic situation" and "Whether come alone to Portugal"	40
Fig. 21 - Relationship between "Change of economic situation" and "Length of residence"	41
Fig. 22 - Relationship between "Preference of dietary pattern" and "Sex"	43
Fig. 23 - Relationship between "Degree of change in eating habits" and "Age"	44
Fig. 24 - Relationship between "Whether there is a habit of eating snacks between two meals in China and in Portugal" and "Sex"	45
Fig. 25 - Relationship between "Whether is a habit of eating snacks between two meals in China and in Portugal" and "Age"	45
Fig. 26 - Situation of buying pre-cooked food	46
Fig. 27 - Relationship between "Food for Portuguese traditional festival" and "Age"	47
Fig. 28 - Relationship between "Consuming Chinese traditional food during Chinese festivals" and "Age"	47
Fig. 29 - Relationship between "Whether there is an influence on health after eating Portuguese style food" and "Sex"	48

Fig. 30 - Changes in consumption of Chinese typical soup.....	51
Fig. 31 - Changes in consumption of Chinese typical cold dishes.....	51
Fig. 32 - Changes in consumption of Chinese typical main dishes	53
Fig. 33 - Changes in consumption of Chinese typical staple food	54
Fig. 34 - Changes in consumption of Chinese typical snacks and desserts	55
Fig. 35 - Changes in consumption of grain products.....	56
Fig. 36 - Changes in consumption of egg, meat and fish	56
Fig. 37 - Changes in consumption of dairy products.....	57
Fig. 38 - Changes in consumption of oils and fats	58
Fig. 39 - Changes in consumption of vegetables	58
Fig. 40 - Changes in consumption of fruits	59
Fig. 41 - Changes in consumption of sweets and cakes	60
Fig. 42 - Changes in consumption of drinks.....	61
Fig. 43 - Relationship between "Number of meals which respondents consumed yesterday in Portugal" and "Sex"	62
Fig. 44 - Relationship between "Preference of taste of food" and "Sex"	69

List of Tables

Tab. 1 - Personal data of respondents.....	21
Tab. 2 - Interrelationships between participants' characteristics	24
Tab. 3 - Correlation between personal characteristics	28
Tab. 4 - Situation of buying food place	42
Tab. 5 - Spearman's Correlations between Portuguese dishes and Chinese immigrants	50

Introduction

Living abroad means that immigrant need to adapt to new language, new diet, new culture, etc. This adaptation is tough for all immigrants, especially when there is a conflict between cultures. A majority of Chinese immigrants have been suffering to adapt to the western culture while keeping the traditional Chinese characteristics. As expressed in the Chinese notion “food is the paramount necessity of the people”, food is important for Chinese civilization [3]. Therefore, the adaptation and changing of diet style of the Chinese immigrants population has been actively discussed in the past decades.

Literature Review

In recent years, the attention has been focused on the countries where large numbers of Chinese immigrants have settled, such as the United States, Canada, Australia, England [4, 5]. Among these studies, Satia et al. [6] measured a Chinese women’s adoption of Western eating patterns in the US. This study found that the younger women with a higher education level and employed outside the home preferred Western diet. This is illustrated by drinking more milk, eating more cheese, eating more frequent at Western fast food restaurants and intake between main meals. Additionally, this group of population reported a higher fat-intake and an increase of fruit and vegetables. Lv and Cason [7] investigated the first generation of Chinese-Americans in Pennsylvania and reported that the consumption frequency of all seven food groups (grains, vegetables, fruits, meat, dairy products, fats/sweets and beverages) increased. The education and income levels have positive influences on consumption of grains, vegetables and fruits. Respondents who have longer length of residence consumed more vegetables, fats/sweets, and beverages. And the subjects with a better English proficiency had a greater intake of grains, fruits, meat and fats. Deng et al. [5] interviewed the North American Chinese and claimed that Chinese immigrants have lower acculturation than other immigrant groups, and have less likelihood of speaking English. The degree of acculturation was influenced positively by the education and income levels. Considering the impact of sex, men are more-acculturated than women, perhaps due to the men being more likely to work out of home for long hours and therefore, are more exposed to the American culture. Adekunle et al. [8] studied vegetable consumption of Chinese immigrants in Toronto, Canada. Results indicate that respondents spent more food budget on vegetables as compared with average Canadians. Additionally, almost 77.9%

of Chinese Canadians preferred supermarkets and 81.5% ethnic grocery stores. Such high interest in ethnic stores is perhaps due to the availability, presence of varieties and proximity to habitual taste. The most preferred vegetable was Chinese cabbage due to the unavailability of other vegetable in the shelf. According to their study, people with a high degree of acculturation possess a relatively high degree of education and educated women are the major grocery buyers. Immigrants are willing to pay more for locally grown fresh vegetables and to pay more attention on the quality and traceability of the production. Tseng and Fang [9] surveyed 436 Chinese American women and found that both higher education level and higher occupation category were associated positively with higher energy density and higher intakes of energy and sugar. Rosenmöller et al. [10] analyzed the changes of dietary pattern of Chinese immigrants in Canada. The results indicated some agreeable changes in their dietary consumption, like increasing intake of fruits and vegetables, and decreasing the use of deep-frying after immigration. Greater awareness and more knowledge about healthy food also occurred. Nonetheless, a rise in portion size, frequency of dining out and increasing intake of convenience foods may demonstrate some negative changes.

Gilbert and Khokhar [11] studied the dietary habits changes of ethnic groups in Europe, they pointed that Chinese children born in France were less likely to be breastfed, showed a low intake of dairy foods and fresh fruits but high consumption of soft drinks, which lead to an inadequate intake of important nutrient and a high intake of sugar. Apart from research in North America and Northern Europe, few studies have investigated eating habits change of Chinese immigrants in countries where following the Mediterranean diet. The composition of Mediterranean diet differ from the North American and oriental ones, besides, the aspects of food production and preparation are also vary. Comparing the dietary pattern from the United States and Northern European, Mediterranean dietary pattern was regarded as a healthful and nutritional diet in especial with positive effect of reduction in cardiovascular mortality [12]. Portugal is a country in southern Europe, whose dietary pattern is classified as Mediterranean diet. In addition, Portuguese is a gastronomy-loving people, enjoying delicious food, an essential part of their daily life. This coincides with the Chinese concept on diet. Porto and Lisbon are the two largest cities of Portugal and therefore the major migration destination for more and more Chinese migrants. Chinese immigrants from these two cities were recruited as objects in this study.

History of emigration

Brief history of Chinese emigration

China has a long history (more than a thousand years) of oversea emigration. The reasons behind this can be summarized in two groups [13]: non-economic ones and economic ones. The most influential non-economic reasons are deterioration of living environment and political persecutions caused by war or change of dynasties. Southeast Asia is the major destination for this kind of Chinese migrants. The economic reasons include the willingness of improving living conditions, aspiration for higher business interest, etc. Those migrants consist of merchants, freelancers, laborers and farmers. Most of the first two kinds were voluntary emigration, while a large number of laborers and famers were forced to leave China. Recent data shows that between 1990 and 2013 the numbers of Chinese emigrants increased from 408.6 ten thousand to 934.25 ten thousand (Figure 1).

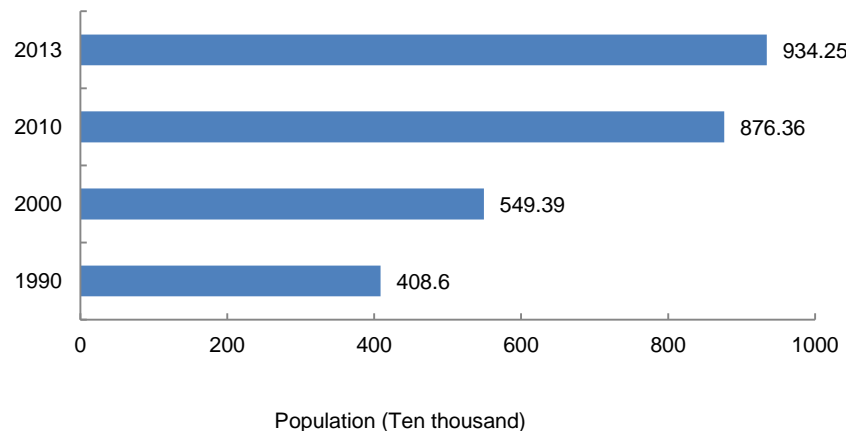


Fig. 1 - Statistics of the overseas Chinese population (1990-2013) (Unit: Ten thousand)

The history of Chinese immigration in Europe

The history of Chinese immigration in Europe experienced several stages. The first stage occurred during the period of First Opium War (1839-1841). The Qing government was compelled to open its domestic market to western countries. A lot of cheap labors chose northern Europe as their destinations of settlement, such as Germany, Netherlands and the United Kingdom. The second stage is during the First World War, during which plenty of cheap Chinese labors were employed for war relate business. The next stage appeared after the Second World War, thousands of Chinese migrants,

especially from Hong Kong, migrated to the United Kingdom and its neighboring countries. A majority of them dedicated themselves in catering business, such as Chinese restaurants and Chinese fast-food stores. In 1949, People's Republic of China established, a declining number of Chinese migrants was observed due to the harsh terms of travelling abroad. In the late 1980's, appreciating the economic reform and "open door" policies, a new generation of Chinese migrants came to Europe. These immigrants demonstrated a variety of skills and had a better educational background [14]. Most of them were international exchange students, foreign labor exporters, family-based immigrants, etc. During this period, the new migrants accounted for about one fifth of total Chinese overseas (10 million).

A huge number of Chinese migrants are living in Europe with the purpose of improving their economic status. This brings a different but meaningful cultural influence to the host (or adopted) countries in various aspects, such as beliefs, values, customs, goods, language and established recognizable communities [15]. Their major business sectors include catering, import-export business, wholesale, and retail business. Between 1980 and 2007, a dramatic increase of the number of overseas Chinese population in EU was observed from 0.622 million in 1980 to 1.454 million in 2000, and finally to 2.15 million in 2007 [16]. Several important factors regarding the sustainable increase of Chinese immigrants in EU are worth noticing: the vigorous growth of international trade between China and Europe; the increase of oversea purchasing power of Chinese population; family reunion; the relaxed restriction of European's immigration policy and the stronger intention to pursue higher education.

The history of Chinese immigration in Portugal

In recent decades, several new destinations for Chinese migrants arose, most of which are southern European countries, for instance, Portugal. During 1990's, the process of economic liberalization (as a consequence of Portuguese entrance to the European Union in 1986) render the development of several domestic strategies aimed at increasing the flexibility of the labor market. This led to a new upsurge in Chinese immigrant labor recruitment [17]. Additionally, China and Portugal have a long relationship in history (more than 400 years) since Portuguese began to reside in Macao. It is clear that Macao plays a crucial role in the immigration between China and Portugal; however, the influence of Macau is vanishing in recent years. Instead, the impact of

economy and education become more and more important. Almost all the private Chinese entrepreneurs in Portugal are entirely dependent on family members and co-ethnic members, no matter in Chinese restaurant or Chinese clothes store. The main reasons to this phenomenon are the insufficient fluency in Portuguese and lack of trust in foreign workers. The recruitment of family members, friends, relatives and other co-ethnic members directly lead to the constant increase of Chinese immigrants. In addition, in recent four years, total Chinese investment accounted for 45% of the total foreign investment in Portugal. In 2011, China's Three Gorges Corporation acquired 21% shares of Portuguese *Energias de Portugal*, the country's dominant power utility; China's State Grid acquired 25% shares of *Ren*, the National Grid operator, and co-founded an Energy Research Center; the shares acquisition of *Caixa Seguros* (a Portuguese insurance group) by Fosun International in 2014, etc. [18]. The entrepreneurial cooperation between China and Portugal not only increase the job opportunities for Portuguese people, but also for Chinese people. With respect to the education sector, there exist educational cooperation between Universities in China and Universities in Portugal. For instance, the department of Portuguese of University of Macau continuously offers exchange programs with Universities in Portugal, including the University of Lisbon, the University of Porto, University of Coimbra, University of Minho, the University of Aveiro and the University of Beira Interior. All students during their third year of BA studies are strongly encouraged to spend at least one semester studying in these Universities, some students even choose to study abroad for two semesters [19]. In addition to the programs between Universities, Portuguese government may spend 1.4 billion euro a year on educational services to foreign students by 2020, estimated by consultants at McKinsey [20]. These educational development and cooperation may encourage Chinese students to immigrate to Portugal.

According to the statistics of immigration in Portugal, there is an increasing number of overseas Chinese migrants both to Porto and Lisbon as illustrated in Figure 2, while the overall immigration in Portugal is decreasing (as shown in Figure 3). The total amount of overseas Chinese migrants in Portugal implies a steady upward trend, from 13331 in 2008 to 18637 in 2013, which constitute a 39.8% increase in 5 years.

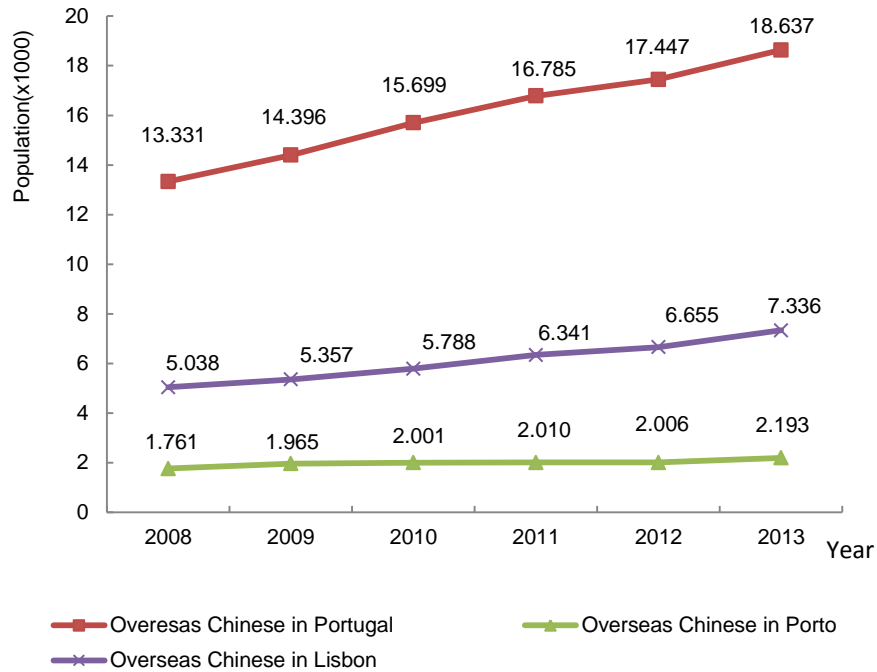


Fig. 2 - Statistics of overseas Chinese in Portugal, in Porto and in Lisbon

Source: Data was obtained from the statistics of *Serviço de Estrangeiros e Fronteiras* (Immigration and Borders Service) of Portugal (<http://sefstat.sef.pt/home.aspx>)

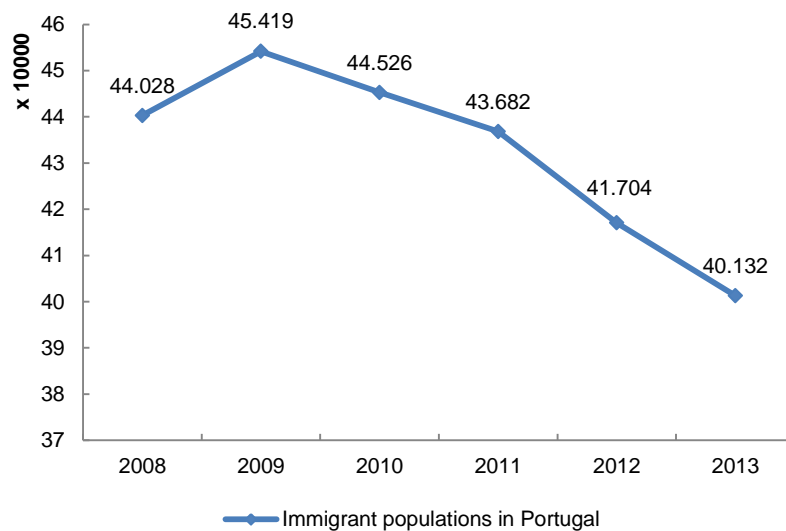


Fig. 3 - Statistics of immigrant populations in Portugal (Porto, Lisbon) (2008-2013) (Unit: Ten thousand)

Source: Data was obtained from the statistics of *Serviço de Estrangeiros e Fronteiras* (Immigration and Borders Service) of Portugal (<http://sefstat.sef.pt/home.aspx>)

The Chinese community in Portugal has never been studied in what their adaptation to Portuguese society namely their dietary habits are concerned. The need to understand how settling down in Portugal has affected their food habits, health and well beings drove us to conduct this investigation.

Objectives

- To appraise the eating habits and food preference of Chinese immigrants living in Porto and Lisbon.
- To identify the differences of eating habit of this population after they have immigrated to Portugal.
- To identify the relationship between the consumption of Portuguese typical dishes and different demographic characteristics.
- To find and analyze the reasons that influenced the changes of consumption in Chinese typical dishes and specific food items by Chinese immigrants.

Research methodology

Sample collection procedure

The participants were recruited by a number of channels from Chinese immigrants living in Porto and Lisbon. The participants of this study were limited to Chinese immigrants over 15 years of age, living in Porto or Lisbon for at least one year.

At the beginning, I interviewed the shopkeepers of the Chinese restaurants and retail stores around the city center, and some of them were willing to participate in the investigation, but 8 immigrants (17.8%) refused to cooperate due to the lack of interest in answering the questionnaire or being too busy to complete it.

The number of Chinese immigrants investigated in the city center was small. Therefore, in a second step, I contacted some of my Chinese friends who have lived in Portugal for several years. I asked them to distribute the questionnaire to other Chinese immigrants, because they have a large social network in Portugal. Such sampling method is called a “snowball” procedure. This kind of approach is usually used if the sample is difficult to find to reach [21].

In the third step, I made a survey in the Chinese communities. Before the beginning of the formal survey, I visited the Chinese immigrants in these communities in order to understand the size of the communities, the distribution and general characteristics of the immigrants. From this basic information, I then interviewed each of the sellers in the numerical order of their address. Most of the sellers are engaged in clothing or commodity wholesale, some of them are too busy on their business to make the interview face to face, I therefore left the questionnaires in their stores, and retrieved them afterwards. The Chinese community in Lisbon was investigated following the same approach.

Finally, 110 Chinese immigrants (58 males and 52 females) accepted to participate as participants and their responses were collected. These participants were divided into three groups according to their age, 16-25 (42 respondents), 26-39 (35 respondents), and 40-74 (33 respondents). Length of residence in Portugal was also evaluated in three levels: less than 5 years, between 5 and 10 years, and more than 10 years.

Methods of data collection

The data was collected by the means of a questionnaire specially designed for the research objectives. It is organized in 3 major sections.

The general information, such as socio-demographic characteristics, cooking and food consumption, and health status, was collected in the first section. In this section, a large number of questions are open-ended ones while some are single-choice ones.

The second section is a Food Frequency Questionnaire (FFQ). This part is designed to assess habitual diet and used to measure the change of eating habits by means of inquiring the consumption frequency of specific food items, traditional Chinese and Portuguese food before and after migration. FFQ consists of 83 food items (categorized into 9 groups), 19 Portuguese traditional dishes and 41 Chinese traditional dishes. Portuguese dishes were selected by examining menus in Portuguese restaurants and canteens, and the selected dishes were confirmed by native Portuguese in order to verify if they are typical and popular among Portuguese. One basic characteristic of the Chinese immigrant population is that most of them came from the south part of China and due to the fact that the Chinese traditional ingredients and cooking styles varies

among different regions, 41 typical southern China dishes were selected. The frequency of consumption is categorized into five groups: once or more than once per day, 3-6 times per week, 1-2 times per week, 1-3 times per month and never or less than once per month. The participants were required to choose exactly one of these five options for each food/ dish.

The third section of the questionnaire consists of a 24-hour recall to assess the food intake in Portugal followed by the food intake of a typical day in China. Meal times and composition were registered in both cases.

The questionnaire was presented both in paper and electronic version. Since some young respondents were too busy to be interviewed face to face and they preferred to fill in the questionnaire online, I sent them the link to the questionnaire in Google Forms. The respondents, who were available to be interviewed, were interviewed face to face in their store under undisturbed circumstances. The original version of the questionnaire was written in mandarin and translated to English (see in appendix). Translation was verified by a trained teacher proficient in both languages.

Data analysis

The data collected was transferred to SPSS to conduct statistical analysis. The variable parameters are determined according to their statistical characteristics.

The first part of questionnaire is analyzed by Spearman's rank correlation coefficient with a confidence level of 95% or 99%. Cross analysis between different personal basic information was performed and the results are presented as percentage. For each of the food/ dish items of FFQ, the value scaled from 1 to 5, indicating that consumption frequency varies between at least once per day and never or less than once per month. In order to compare and analyze the changes in food consumption, the values of consumption frequency in Portugal were subtracted by the values in China. A positive result means that the frequency of consumption has increased, and a negative result indicates a decreasing tendency; otherwise, the frequency is unchanged. Wilcoxon's Sign Rank Test with a confidence level of 95% was used to identify whether there are significant differences between food consumption frequency in Portugal and in China. .

To identify the relationship between the consumption frequency of typical Portuguese dishes and several characteristics, Spearman's rank correlation coefficient with a confidence level of 95% or 99% were also used.

Results

Personal characteristics and food habits

Tab. 1 - Personal data of respondents

Demographic characteristics					
	No.	Percentage (%)		No.	Percentage (%)
No. Participants	110	100	Civil status		
Sex			Single	61	55.5
Male	58	52.7	Married	48	43.6
Female	52	47.3	Divorced or separated	1	0.9
Age (32.83*)			Education (years)/Age group	13.67*	
16-25	42	38.2	Age 16-25	12.83*	
26-39	35	31.8	Age 26-39	15.60*	
40-74	33	30	Age 40-74	12.70*	
Place of birth			Length of residence (years)		
Zhejiang Province	59	53.6	[0,5[38	34.5
Shandong Province	14	12.7	[5,10]	40	36.4
Fujian Province	6	5.5	>10	32	29.1
Shanghai	6	5.5			Average years
Other regions	25	22.7			7.7 (Std. 5.9)
*Mean					

Results of personal data of respondents are explained in Table 1. The demographic characteristics of respondents are described in the following.

Place of residence: 18 respondents reside in Lisbon and 92 respondents reside in Porto.

Age: All participants are between 16 - 74 years old, with an average of 32.83 years old.

Place of birth: Just one respondent was born in Italy and all the others were born in China. Among the participants born in China, 53.6% of them come from Zhejiang Province, in the south part of China, and more than half of these respondents are living in Lisbon. The other 51 respondents (46.4% of total) come from Shandong Province (12.7%), Fujian Province (5.5%), Shanghai (5.5%), etc.

Civil status: 55.5% of the respondents are single, 43.6% are married, and only one respondent is classified as divorced or separated. More than half of respondents in Porto are single, while the situation in Lisbon is the opposite.

Experience of change of residence: After examining the birthplace and the place where they lived before they came to Portugal, we observe that 26 (23.6%) respondents left their birthplace, 13 of them had already been living abroad before they immigrated to Portugal, and the participant born in Italy and had been living there.

Length of residence in Portugal: 65.5% of total participants have resided in Portugal for at least 5 years. Among this population, the longest duration is 35 years. There is no obvious difference on average value of length of residence in Portugal between the populations in Porto and Lisbon, but the maximum interval in Porto was larger than in Lisbon by 17 years.

Educational level: On average, respondents studied for 13.67 years. In China, primary schools lasts six years, junior high schools three and high school, three years. A bachelor's degree normally takes 4 years (some majors should be completed in 5 years, like Medical Specialty), a master program takes 3 years and a doctor degree needs more or less 3 years. Comparing the educational level between these three age groups, the young group and the old group have an average of 12.87 and 12.70 years of education, respectively. The respondents in middle group have a higher level of education compared with the respondents in other two groups, and the mean value is 15.6 years. Respondents from Porto have a higher level of education than those in Lisbon. 52.2% of the participants from Porto possess at least a bachelor's degree, while in Lisbon, this rate is only 5.6%, but the percentage of high school degree reached 83.3% compared with 18.2% in Porto.

Change of occupation: After migration, 57 respondents (51.8%) changed their jobs, 20 of them were students in China but started to work after they have immigrated to Portugal. In Portugal, a majority (40.0%) of the respondents is engaged in wholesale industry, but the number in China was 18.1%. In the young age group, 88.1% of respondents were students in China and this value reduced to 57.1% in Portugal, and most of others work as shop assistants. Half of the participants in middle age group started their own business after they immigrated to Portugal. 38.9% of the entire group of participants from Lisbon is engaged in commerce, and the proportion of shop assistant

and student is the same 16.7%. However there are more students in Porto (29.3%) among other occupations, followed by shop assistant (14.1%) and business man (12%). 50.6% of respondents from Porto were student when they were in China, while the number for participants from Lisbon is 33.3%.

Purpose of immigration: Half of respondents in Lisbon immigrated to Portugal in order to increase their income, while only 18.5% of respondents in Porto have the same purpose. The most popular motivations of respondents living in Porto are to broaden their horizons, learn new skills, reunite family and studies overseas.

Table 2 illustrates the interrelationships between the characteristics of Chinese immigrants. Next, there will be a detailed explanation of each pair of relationship.

Tab. 2 - Interrelationships between participants' characteristics

	Sex	Age	Frequency of eating outside	Language skills	Length of residence	Health status	Satisfaction degree	Came alone
Age			X					
Came alone	X	X						
Length of residence			X					
Integration	X	X		X		X	X	
Language skills	X	X			X			
Education degree			X		X			
Satisfaction degree		X			X	X		
Weight	X				X			
Economic situation		X			X			X
Place to buy food	X	X						
Preference of dietary pattern	X							
Degree of eating habits change		X						
Habit of eating snack	X	X						
Food for festival		X						
Influence on health after eating Portuguese food	X							

Whether immigrant came alone to Portugal:

Among all the 110 participates, 59 immigrants came to Portugal alone.

“Whether immigrant came alone to Portugal” & “Sex”: In most families, there is an unwritten rule that the man is responsible for exploring the new society and settling down. Afterwards, his wife will come to reunite with or without the child after the man already possessed a certain economic power. Figure 4 illustrates that 68.97% of male came alone to Portugal.

“Whether immigrant came alone to Portugal” & “Age”: Taking into account age, Figure 5 indicates that only 38.10% of participants of the young group came alone to Portugal, whereas, the percentage of the middle group and the old group is 60.00% and 66.67%, respectively. In accordance with these results, we can conclude that older subjects migrated alone to Portugal whereas young ones are more likely to migrate with relatives or friends.

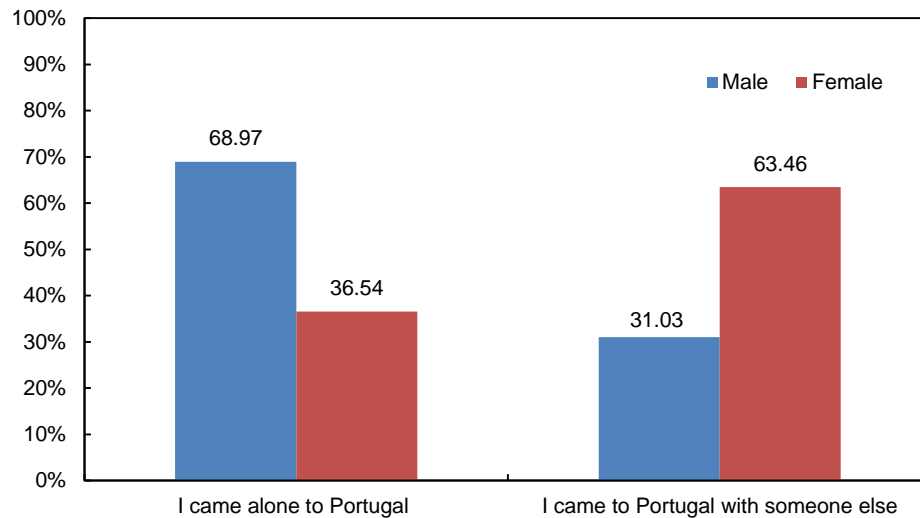


Fig. 4 - Relationship between "Whether came alone to Portugal" and "Sex"

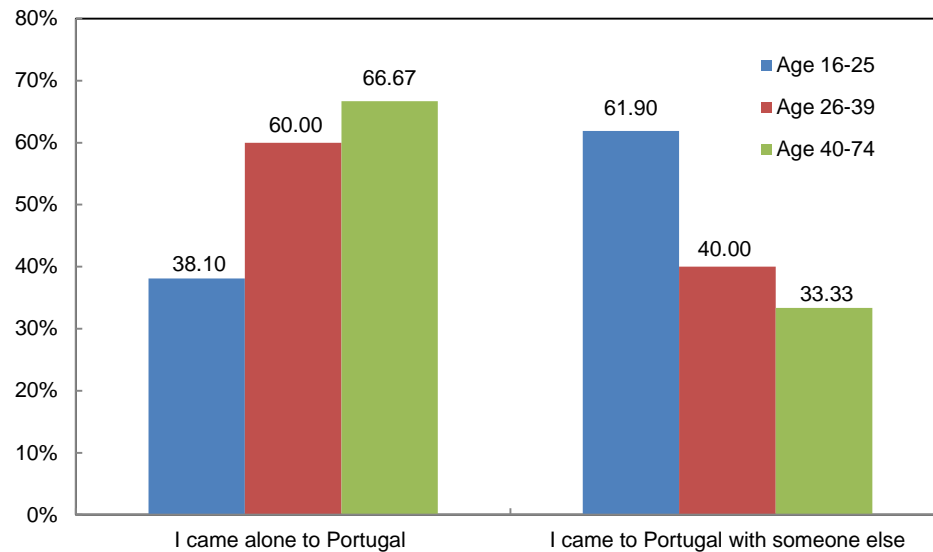


Fig. 5 - Relationship between “come alone to Portugal” and “Age”

Degree of self-reported integration:

“Degree of self-reported integration” & “Sex”: According to the classification of degree of self-reported integration, we can see that 39.1% of immigrants considered themselves as being integrated at a moderate level (degree 3), 44.23% of female and 34.48% of male are in line with this result. If we consider a degree of at least 3 (degree 3, 4 and 5) as well integrated, only 60.34% of the male are satisfied with this, while value for women is 84.62% (see Figure 6). We conclude that women seem to be integrated into the Portuguese society more easily than men.

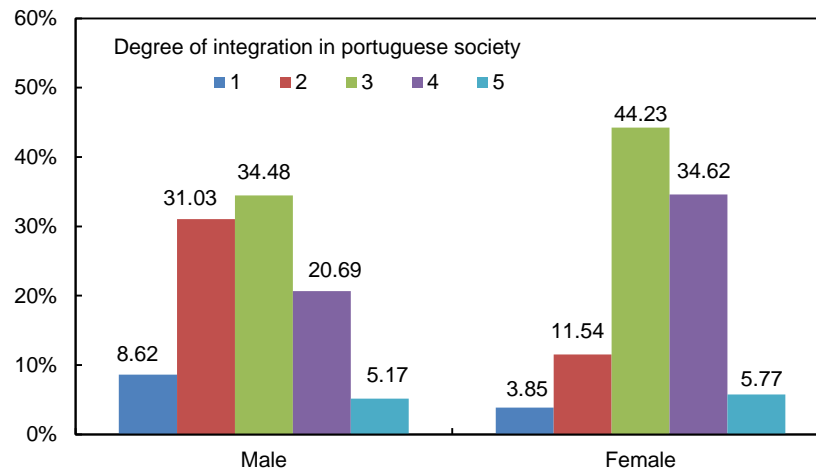


Fig. 6 - Relationship between "Degree of self-reported integration in Portuguese society" and "Sex"

Note: 1= Less integration to 5=More integration

“Degree of self-reported integration” & “Age”: We can see from Table 3 that the elder immigrants have a relatively low degree of self-perceived integration in Portuguese society. 85.71% of the participants from the young group are classified as having high-degree (at least 3) integration (see Figure 7). This might be due to the rich social activities and interaction between young Chinese immigrants and native Portuguese young people. On the other hand, the high adaption to new environment of young people may also contribute to the result.

Tab. 3 - Correlation between personal characteristics

		Correlations									
			Age	Length of residence	Degree of education	Degree of integration in portuguese society	Portuguese language skills	Degree of the satisfaction of their present life in Portugal	Degree of changes of eating habits	Change of weight	Frequency of eating out per week
Spearman's rho	Age	Correlation Coefficient		.639**	.014	-.279**	-.181	-.331**	-.052	-.185	-.364**
		Sig. (2-tailed)		.000	.884	.003	.059	.000	.590	.054	.000
		N		110	110	110	110	110	110	110	110
	Length of residence	Correlation Coefficient	.639**		-.284**	-.116	.213*	-.304**	-.046	-.266**	-.442**
		Sig. (2-tailed)	.000		.003	.227	.025	.001	.633	.005	.000
		N	110		110	110	110	110	110	110	106
	Degree of education	Correlation Coefficient	.014	-.284**		-.052	-.156	.112	.113	.141	.266**
		Sig. (2-tailed)	.884	.003		.593	.104	.242	.241	.142	.006
		N	110	110		110	110	110	110	110	106
	Degree of integration in portuguese society	Correlation Coefficient	-.279**	-.116	-.052		.237*	.243*	.164	.122	.123
		Sig. (2-tailed)	.003	.227	.593		.013	.010	.086	.203	.211
		N	110	110	110		110	110	110	110	106
	Portuguese language skills	Correlation Coefficient	-.181	.213*	-.156	.237*		.020	.131	-.105	.080
		Sig. (2-tailed)	.059	.025	.104	.013		.837	.173	.276	.414
		N	110	110	110	110		110	110	110	106
	Degree of the satisfaction of their present life in Portugal	Correlation Coefficient	-.331**	-.304**	.112	.243*	.020		.145	.090	.323**
		Sig. (2-tailed)	.000	.001	.242	.010	.837		.132	.350	.001
		N	110	110	110	110	110		110	110	106
	Degree of changes of eating habits	Correlation Coefficient	-.052	-.046	.113	.164	.131	.145		-.052	.106
		Sig. (2-tailed)	.590	.633	.241	.086	.173	.132		.591	.278
		N	110	110	110	110	110	110		110	106
	Change of weight	Correlation Coefficient	-.185	-.266**	.141	.122	-.105	.090	-.052		.171
		Sig. (2-tailed)	.054	.005	.142	.203	.276	.350	.591		.079
		N	110	110	110	110	110	110	110		106
Frequency of eating out per week	Correlation Coefficient	-.364**	-.442**	.266**	.123	.080	.323**	.106	.171		
	Sig. (2-tailed)	.000	.000	.006	.211	.414	.001	.278	.079		
	N	106	106	106	106	106	106	106	106		
Description of present health status	Correlation Coefficient	-.043	.027	-.228	.241*	.051	.371**	.249*	-.065	-.065	
	Sig. (2-tailed)	.718	.823	.054	.041	.672	.001	.035	.587	.600	
	N	110	110	110	110	110	110	110	110	110	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

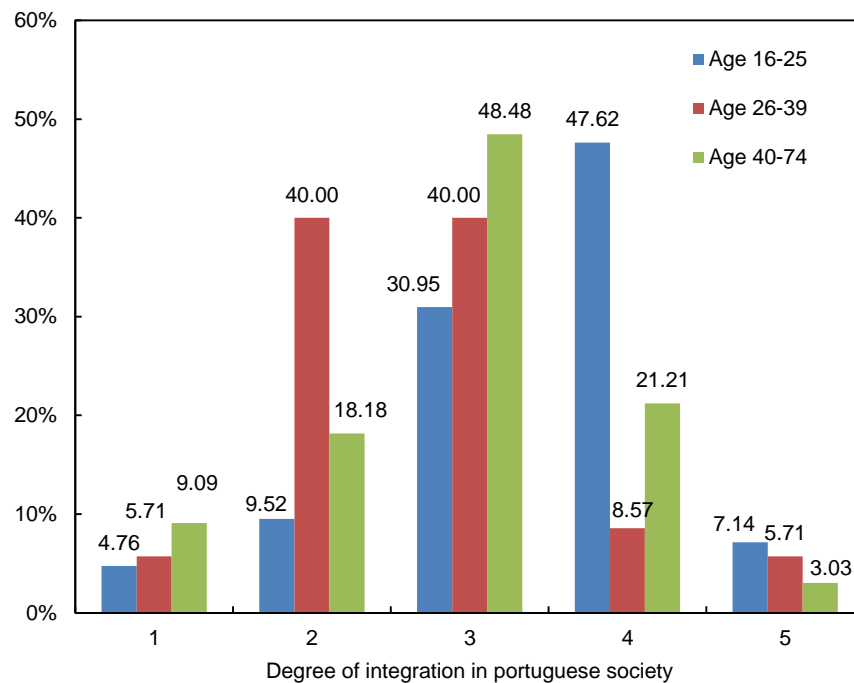


Fig. 7 - Relationship between "Degree of self-reported integration in Portuguese" and "Age"

"Degree of self-reported integration" & "Degree of satisfaction": Table 3 indicates that the correlation coefficient between the "Degree of self-reported integration" and "Degree of satisfaction" is positive, therefore, we can conclude that the respondents who have high degree of integration are more satisfied with their lives than the remaining ones.

"Degree of self-reported integration" & "Portuguese language skill": We can also observe from Table 3 that the degree of self-reported integration and skill of Portuguese language have positive relationship. It means respondents who have high degree of integration are generally good at speaking Portuguese.

"Degree of self-reported integration" & "Health status": Table 3 illustrates the positive correlation between the degree of self-reported integration and present health status. It implies that the immigrants who have a better integration in Portuguese society are report to be much healthier.

Portuguese language skill:

However, from the overall perspective, 35.5% of immigrants could only understand and speak simple Portuguese words, and 40% of them could communicate with Portuguese on the basic level.

“Portuguese language skill” & “Sex”: Sex has an important impact in Portuguese language skills. We observed that females are more proficient than males on learning Portuguese. As shown in Figure 8, 71.15% of female respondents could use Portuguese language at least in daily communications and the percentage for males declines to 44.82%.

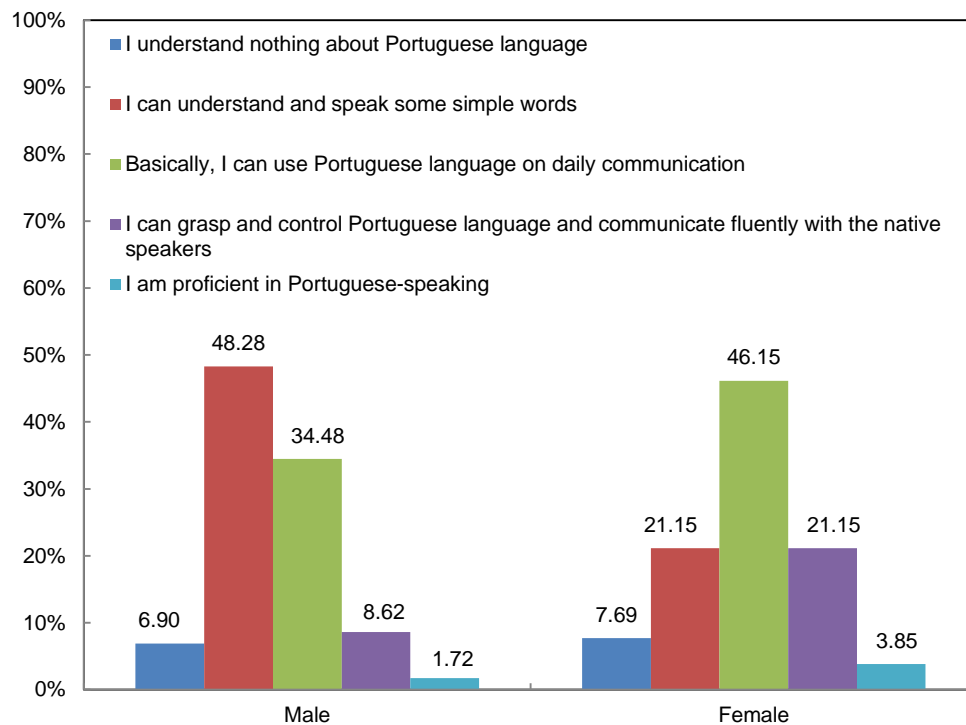


Fig. 8 - Relationship between "Portuguese language skills" and "Sex"

“Portuguese language skill” & “Age”: Figure 9 illustrates a negative relation between language skills and age. The participants who can use Portuguese at least in daily communication accounted for 66.67%, 54.29% and 48.48% in these three age groups, respectively.

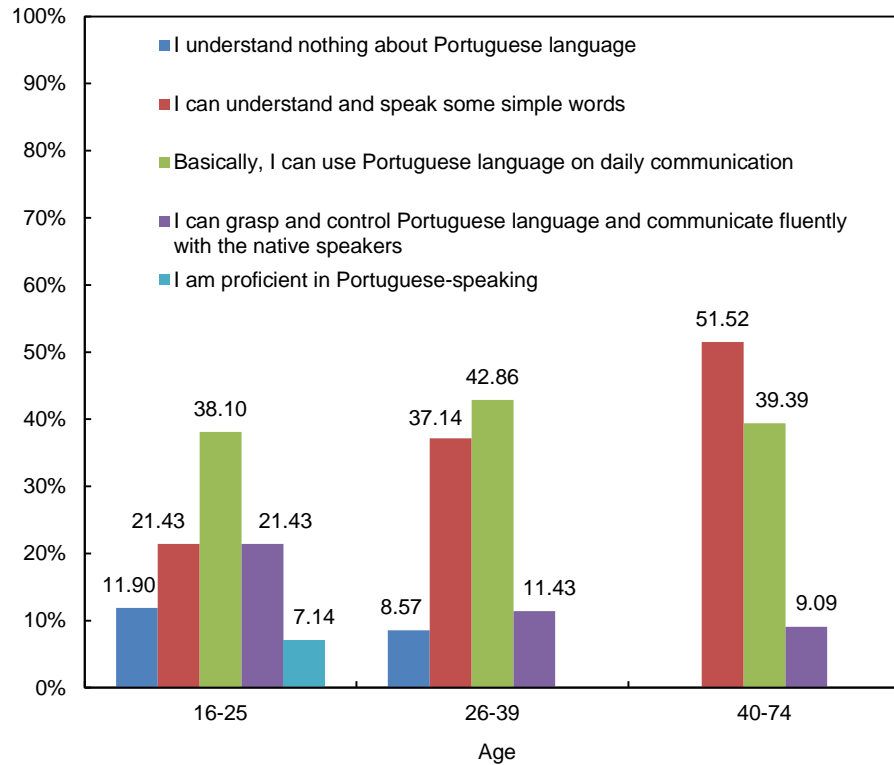


Fig. 9 - Relationship between "Portuguese language skills" and "Age"

“Portuguese language skill” & “Length of residence”: The length of residence in Portugal has a positive relationship with Portuguese language skill, as observed in Table 3 and Figure 10. Those immigrants who have lived in Portugal for a long time are more capable of speaking Portuguese.

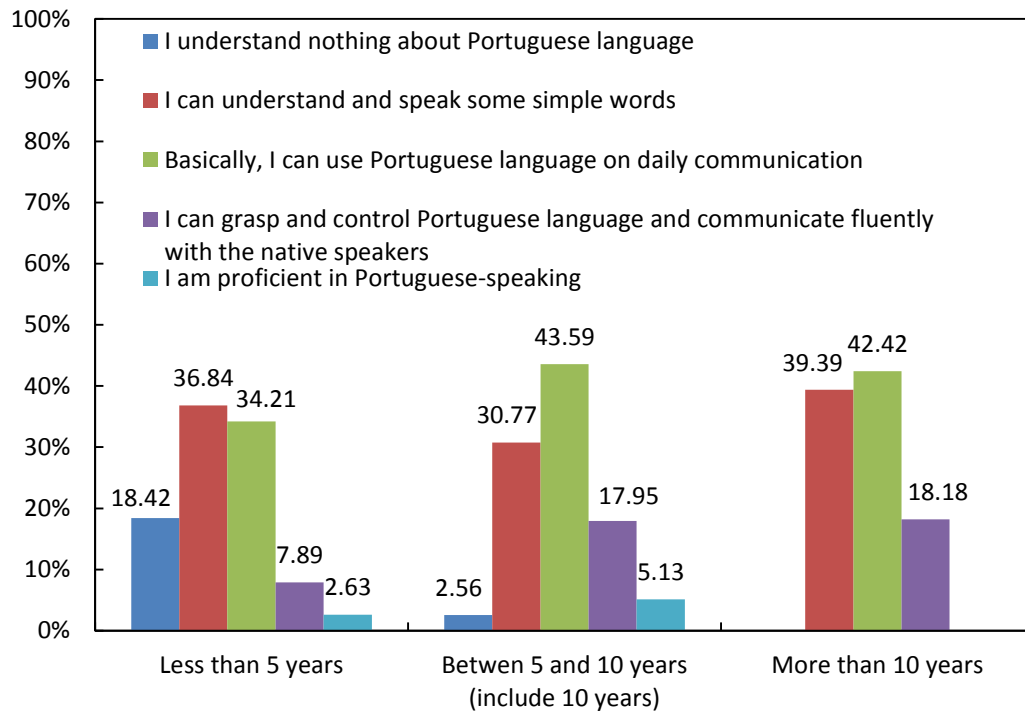


Fig. 10 Relationship between "Portuguese language skills" and "Length of residence"

Education degree:

“Education degree” & “Length of residence”: A negative relationship between education degree and length of residence is observed. The immigrants who have resided in Portugal for a long time are generally aged and this group of people has a relative low degree of education (see Table 3 and Figure 11).

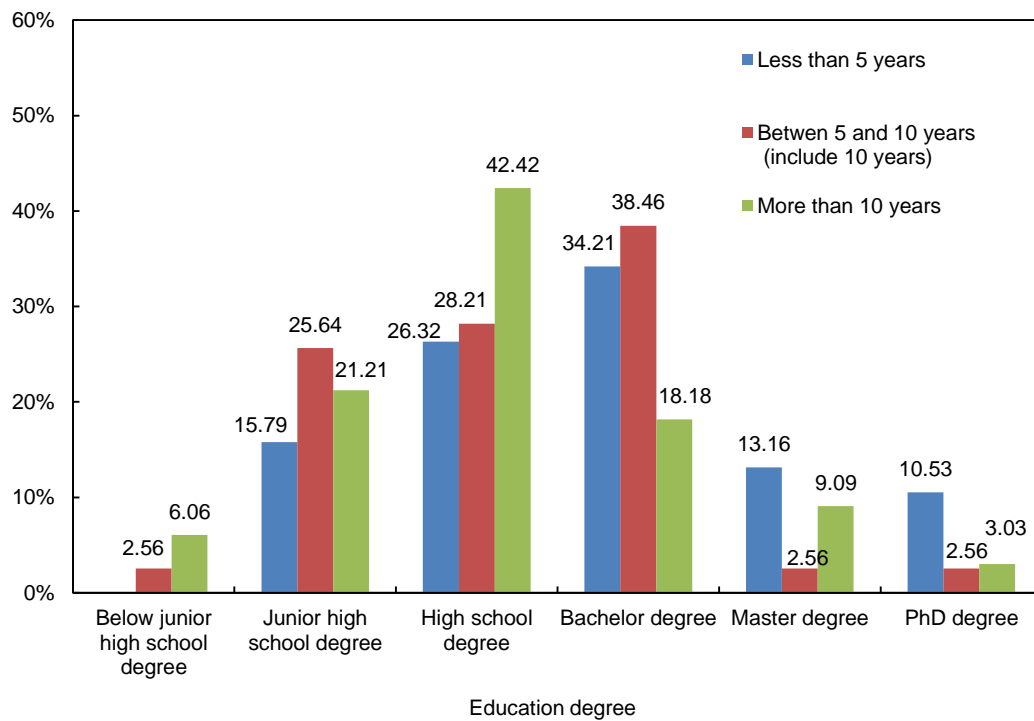


Fig. 11 - Relationship between "Length of residence in Portugal" and "Education degree"

“Education degree” & “Frequency of eating outside”: Table 3 expresses a positive relationship between educational degree and frequency of eating out of home. It means that immigrants with high education degree are more likely to eat outside than others.

Degree of Satisfaction:

In total, 60.9% of the respondents are satisfied with their present lives in Portugal.

“Degree of satisfaction” & “Age”: As we can see from Figure 12, the ratio of satisfaction in young group is 80.95%, which is higher than middle group (62.86%) and old group (33.33%).

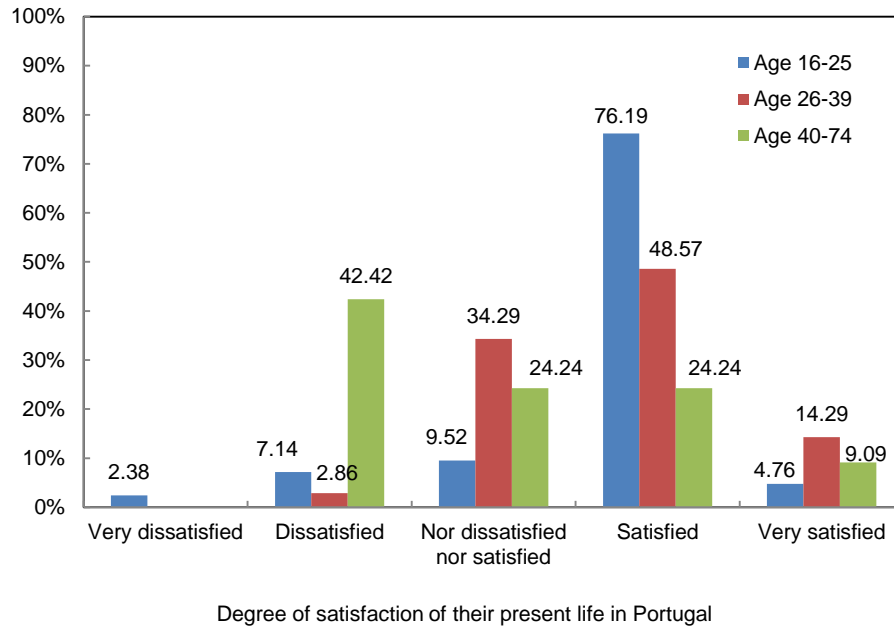
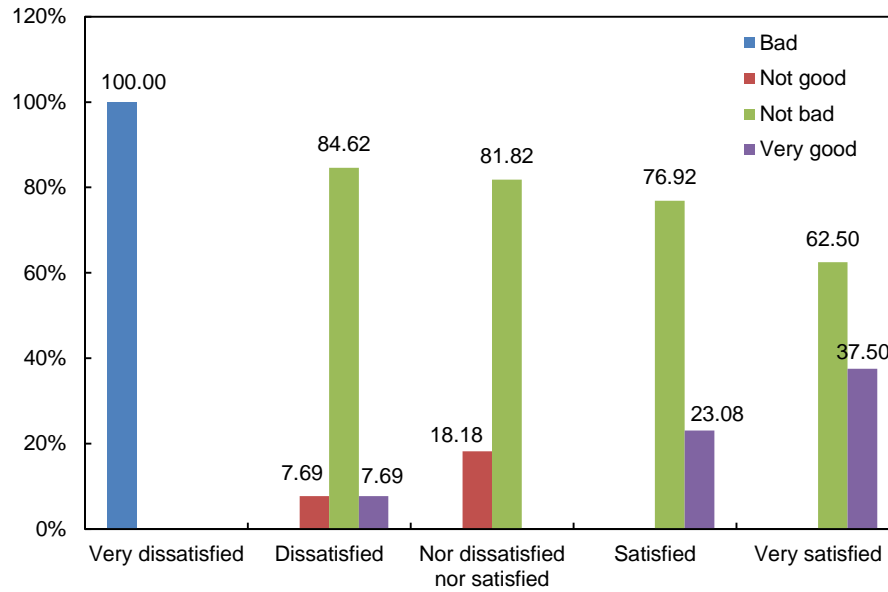


Fig. 12 - Relationship between "Degree of satisfaction of present life in Portugal" and "Age"

“Degree of satisfaction” & “Health status”: Seeing from Figure 13, we observe that 60.58% of respondents who regard their health status very good are satisfied with their present life in Portugal and, conversely respondents who feel to be unhealthy are very dissatisfied with their present life. Therefore, we conclude that health status and degree of satisfaction with life are also interrelated (see Table 3).



Degree of satisfaction of their present life in Portugal

Fig. 13 - Relationship between "Degree of satisfaction" and "Health status"

“Degree of satisfaction” & “Length of residence”: Figure 14 illustrates that 81.57% of the immigrants who have lived in Portugal less than 5 years are satisfied with the present life, whereas the value is only 42.42% for the immigrants who have lived in Portugal longer.

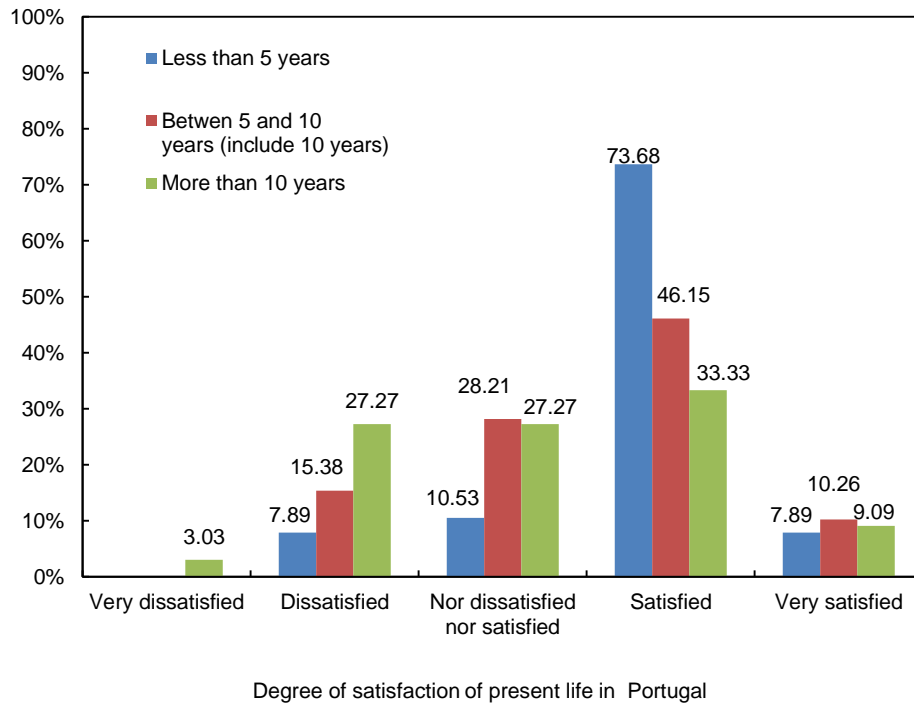


Fig. 14 - Relationship between "Degree of satisfaction of present life in Portugal" and "Length of residence in Portugal"

Frequency of eating outside:

“Frequency of eating outside” & “AgeLength of residence”: We first examine the relationship between the frequency of eating outside and age. As indicated in Figure 15, these two variables are negatively related. Since the length of residence is positively related with age (see Table 3), therefore it is also negatively related with the frequency of eating outside. However, this result might be misleading in the sense that eating habit normally coincide with one’s age and living conditions. Additional justification is that, in each of these three age groups, the ratio of length of residence over age is not related with the frequency of eating outside. We therefore may conclude that the frequency of eating outside is related with age rather than the length of residence.

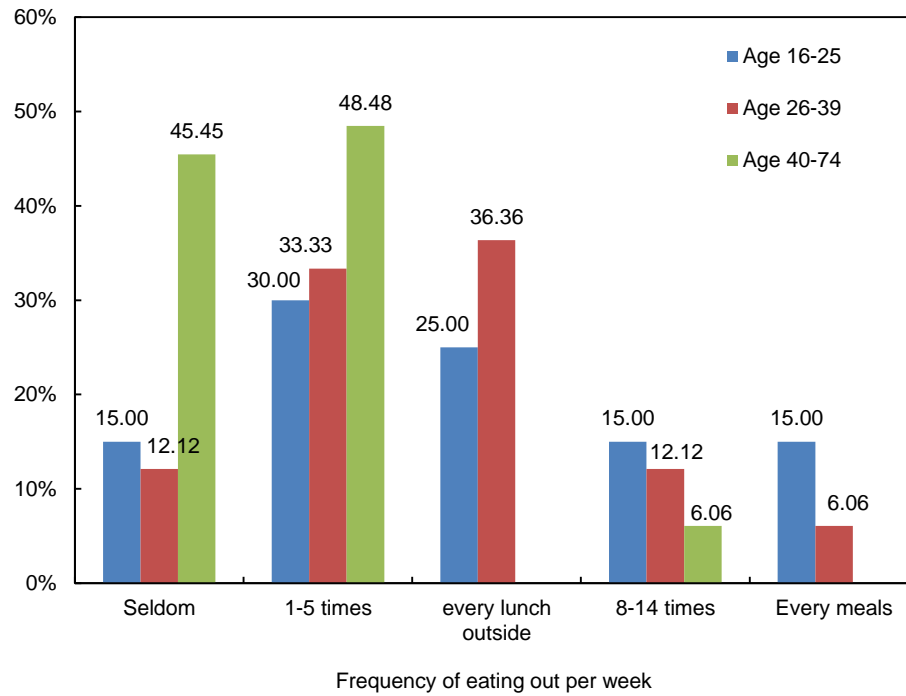
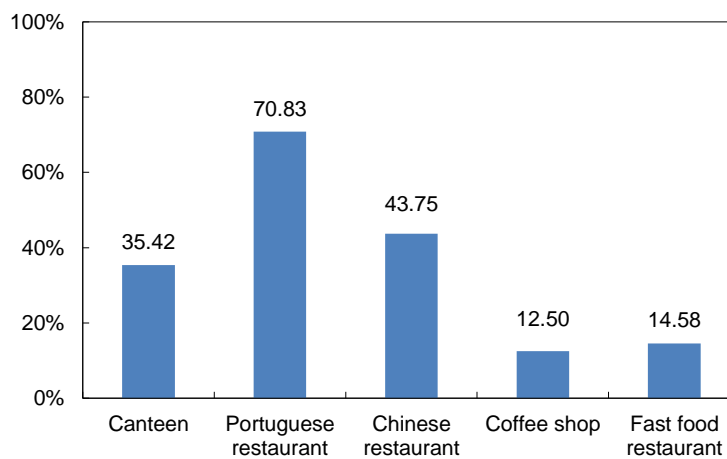


Fig. 15 - Relationship between "Frequency of eating out per week" and "Age"

Place of dining out:

In regard to the place of dining out, 70.83% of respondents prefer Portuguese restaurant and 43.75% of respondents usually choose Chinese restaurant. The percentage of immigrants who eat out in canteen accounted for 35.42%. The value is only 12.50% and 14.58% for coffee bar and fast food restaurant, respectively (see Figure 16).



Note: percentage exceeds 100 as each respondent could give more than one answer.

Fig. 16 - Places of dining out

We observed that the frequency of eating out is negatively related with age, and the most popular destination of eating out is Portuguese restaurant. Accordingly we conclude that aged immigrants go out less to eat in Portuguese restaurant. Several reasons may contribute to this result. Firstly, aged immigrants generally have more spare time to cook at home. Secondly, they have already formed the Chinese eating habit and it is not easy to change. Moreover, their degree of adaptation to Portuguese society is also low.

Change in body weight:

The change of participants' height and weight after moving to Portugal are evaluated. Except the height increase of some young people due to the normal physical development, no other significant change of height is observed. Regarding the difference of weight, 56 immigrants believed that their weight had increased accounting for 50.9% of total participants, and 8 immigrants admit a large increase of weight after immigration. Only 8.2% immigrants lost their weight, and 40.9% maintained it.

“Change in body weight” & “Sex”: Female immigrants showed a higher percentage of change in body weight than male, 63.46% compared with 55.17% of male. Notably, 13.47% of women lost weight after moving to Portugal, while the value for men is only 3.44% (see Figure 17).

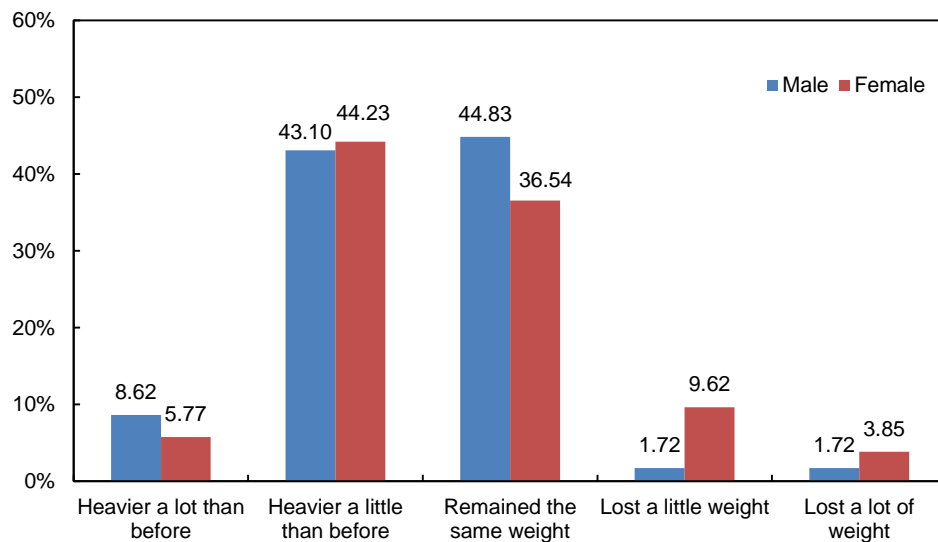


Fig. 17 - Relationship between "Change in body weight" and "Sex"

“Change in body weight” & “Length of residence”: Immigrants who have lived in Portugal for longer weigh more than before migrating. Seeing from Figure 18, 66.66% of respondents from the middle length of residence group and 60.61% of respondents from the longest residence group report increase of weight after immigration, whereas, the value for the shortest residence group is only 26.31%.

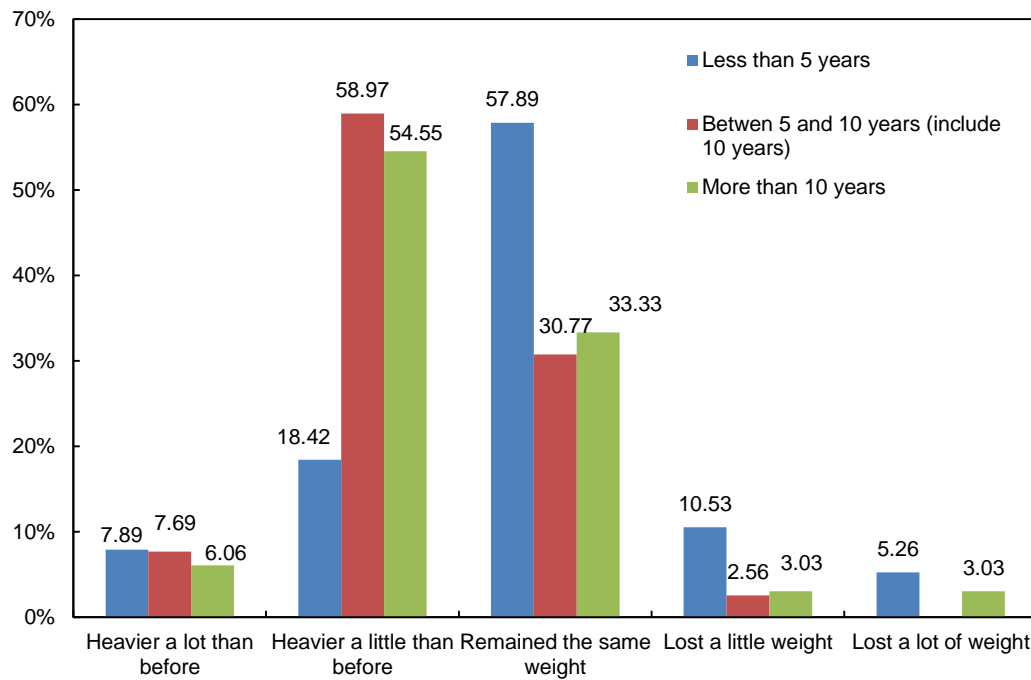


Fig. 18 - Relationship between "Change in body weight" and "Length of residence in Portugal"

Economic situation:

Regarding the change of economic situation, participants' answers are divided into three categories: improved, worsened and remained. Among all the immigrants, 52.7% of them consider their economic conditions are improved and only 10% of respondents believe their economic situation are worsened.

“Economic situation” & “Age”: Most immigrants (65.71%) from the middle age group express an improved economic situation. The old group has the highest ratio (27.27%) of non-satisfaction about their economic situations, while only 10% of all immigrants consider their economic situations deteriorated (see Figure 19).

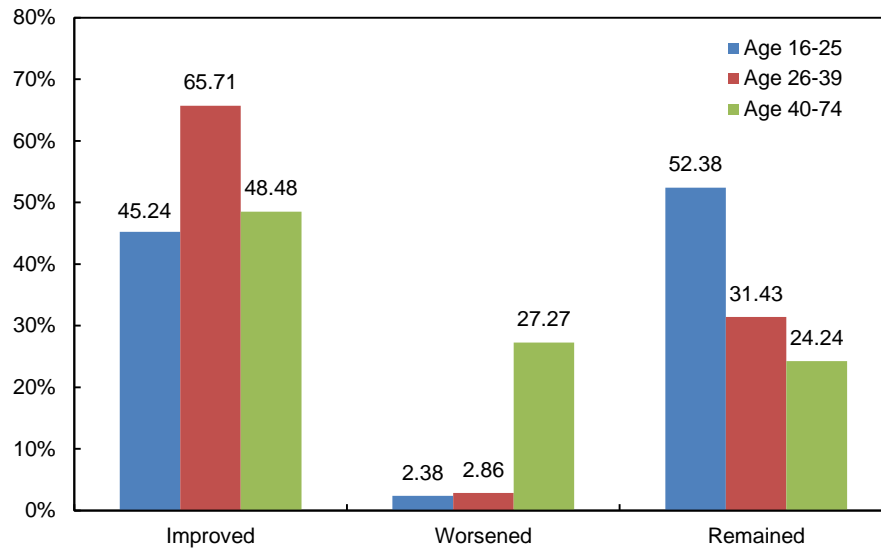


Fig. 19 - Relationship between "Change of economic situation" and "Age"

"Economic situation" & "Whether or not immigrant came alone to Portugal":

64.71% of the respondents who came with other people consider their economic situation was improved, while this value of the immigrants who came alone is 42.37% (see Figure 20).

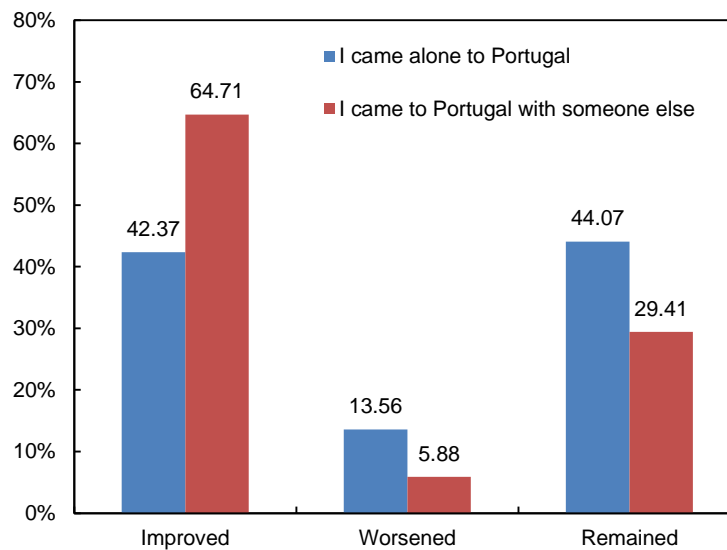


Fig. 20 - Relationship between "Change of economic situation" and "Whether come alone to Portugal"

"Economic situation" & "Length of residence": No obvious distinction is observed among immigrants about their economic situations and length of stay. However, the

number of pessimist in terms of economic situation increases as the length of residence increases (see Figure 21).

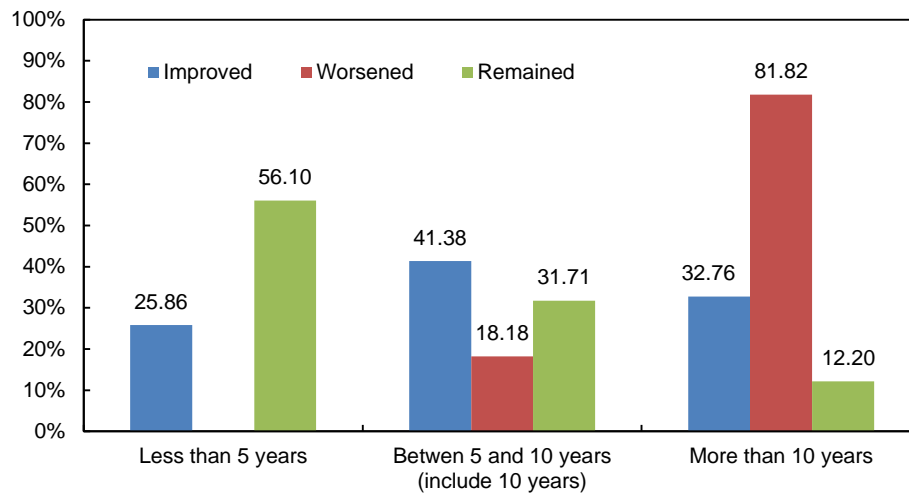


Fig. 21 - Relationship between "Change of economic situation" and "Length of residence"

Place to buy food:

For all the respondents, there are two major places to buy food in Portugal: supermarket and hypermarket, which is selected by 63.6% and 80% of the respondents, respectively. The Chinese ethnic shop is chosen by 42.7% of the respondents.

“Place to buy food” & “Age”: In the young group, 59.3% of participants prefer supermarket and 85.2% prefer hypermarket. However, only 25.9% of respondents purchase food from Chinese ethnic shop. The general situation for the middle group is similar, but fewer people prefer supermarket and more people choose ethnic shop. Respondents from old group are most interested in supermarket (76.2%).

“Place to buy food” & “Sex”: We find that 84.4% of female usually buy foods from hypermarket and 56.3% of them choose supermarket. As for male, the difference of preference between supermarket and hypermarket is smaller than the female. For other options of place, the preference is almost the same.

Comparing the situation in Portugal and in China, from the general perspective, we discovered clearly that shopping or buying in supermarket and hypermarket increased a lot after immigration, from 30% to 63.6% and 40.9% to 80%, respectively. Conversely,

the preference for buying food in country fair (market) decreased dramatically from 70% to 4.5% (see Table 4).

Tab. 4 - Situation of buying food place

Place of buying food	In Portugal		In China	
	No.	Percentage (%)	No.	Percentage (%)
Supermarket	70	63.6	33	30
Hypermarket	88	80	45	40.9
Mini-market/grocery/special shops	20	18.2	29	26.4
Country fair (Market)	5	4.5	77	70
Ethnic shop	47	42.7	0	0
Obtain directly from manufacturer	0	0	2	1.8
Obtain directly from my own fields	3	2.7	11	10
Note that the percentage exceeds 100 as each respondent could give more than one answer.				

Preference of dietary pattern:

The dietary patterns are classified into three categories, mainly Chinese style, mainly Portuguese style and combination of both. According to the results of interview, 69.1% of the respondents prefer Chinese style food and the population who prefers Portuguese style only accounted for 11.8%. Additionally, around 20% of respondents would report a “mixed style” diet, including both Chinese and Portuguese foods.

“Preference of dietary pattern” & “Sex”: Female (76.92%) shows a greater preference on Chinese style food than male (62.07%). Nonetheless the situation for Portuguese style food is the opposite, only 1.92% of female select the Portuguese style food as their first choice versus 20.69% of male (see Figure 22). Additionally, no obvious correlative relationship is observed between the preference of dietary pattern and ages.

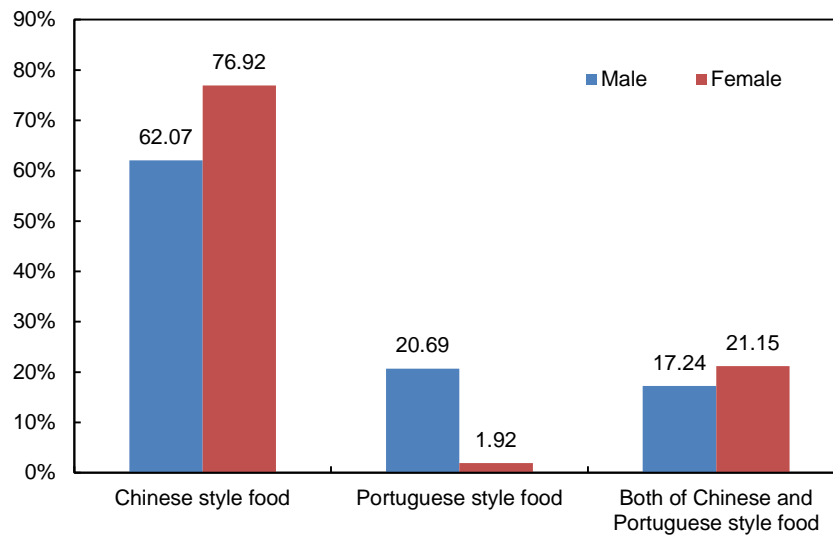


Fig. 22 - Relationship between "Preference of dietary pattern" and "Sex"

Degree of eating habits change:

The changes are divided into 5 degrees: not changed at all, almost not changed, changed, changed a lot, changed totally. 65.5% of respondent report a change in their eating habits after immigration.

“Degree of eating habits change” & “Age”: The immigrants from young group have the highest population (69.05%) of change, while the value decreased to 65.71% in middle age group and 60.60% in old group (see Figure 23).

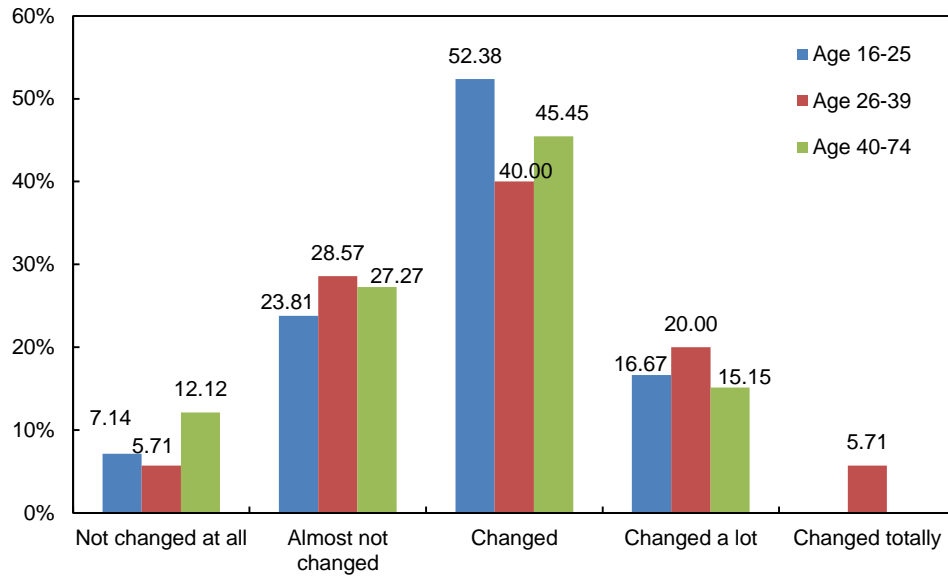


Fig. 23 - Relationship between "Degree of change in eating habits" and "Age"

Habit of eating snack:

Snacks are usually defined as the foods eaten between main meals. There are various types of snack. In China, the snack is mainly fruits, nuts, cookies, pastry, potato chips and dried fruits. But in Portugal, respondents consume additionally chocolate, cake, bread, yogurt and coffee between meals. 55.5% of respondents have the habit of eating snack in China and 51.8% of the respondents have this habit in Portugal.

“Habit of eating snack” & “Sex”: Women are more likely to eat snacks than men, no matter in China and in Portugal (see Figure 24)

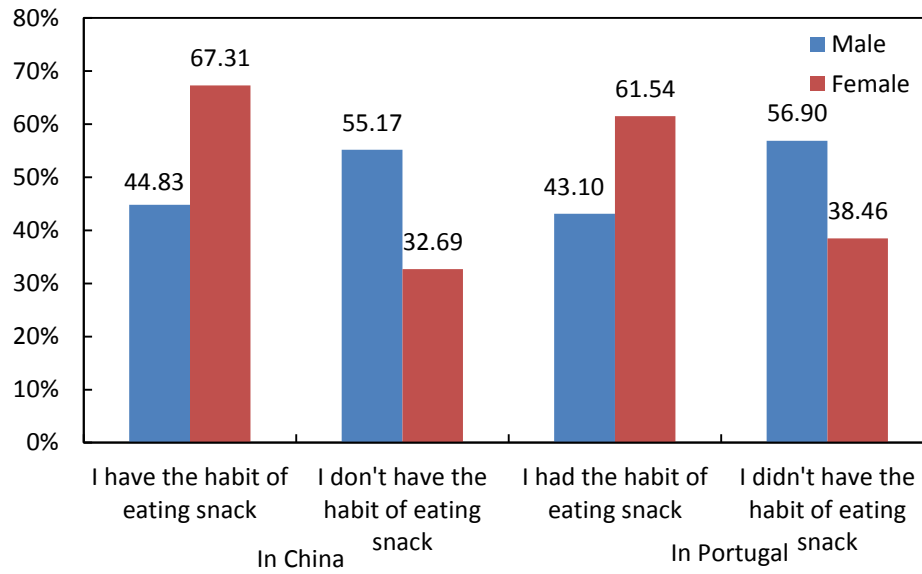


Fig. 24 - Relationship between "Whether there is a habit of eating snacks between two meals in China and in Portugal" and "Sex"

"Habit of eating snack" & "Age": Figure 25 indicates the degree of preference of snack decreased along with the increase of age no matter in China or in Portugal.

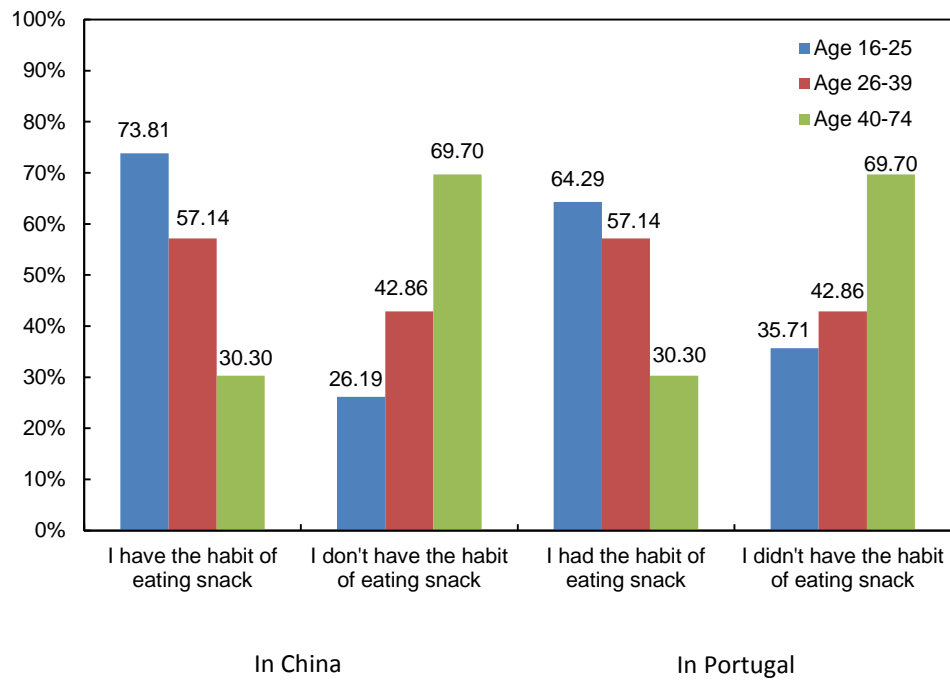


Fig. 25 - Relationship between "Whether is a habit of eating snacks between two meals in China and in Portugal" and "Age"

Consumption of pre-cooked food:

We can see from Figure 26 that 12.96% of respondents used to buy pre-cooked food. There are 8 kinds of pre-cooked food which are consumed quite often by Chinese immigrants: canned fish and sausage, sandwich or hamburger, pizza, instant noodles, quick-frozen food, roast meat (chicken), soup and prepared vegetables.

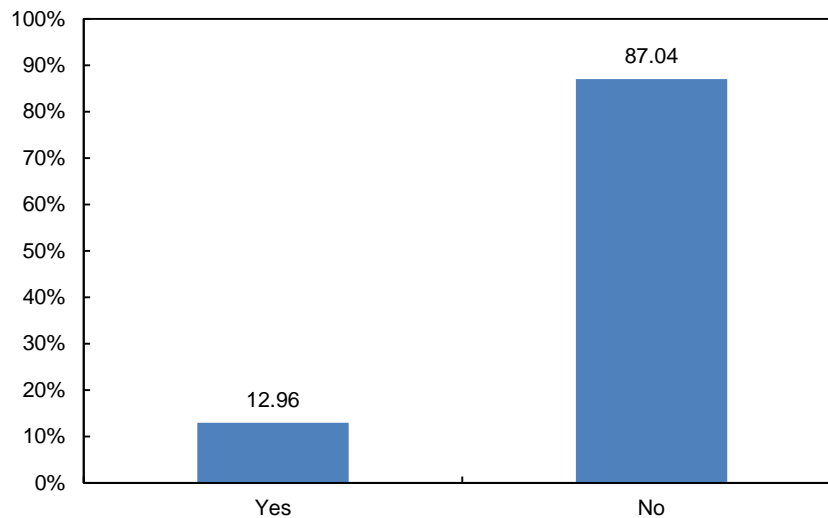


Fig. 26 - Situation of buying pre-cooked food

Foods for festivals:

Food and eating have also a strong cultural meaning, especially in festivals, as they are seen as a medium to celebrate the festivals. When asking about the food consumed during Portuguese traditional festivals, 39% of respondents consume Chinese food, 30.9% of immigrants consume the foods as usual, and only 12.7% of participants would choose Portuguese food for festival.

“Food for festival” & “Age”: We can find that the immigrants of old group pay more attention to food in festival celebration (see Figure 27). Concerning the Chinese traditional festivals, 81.8% of immigrants select typical Chinese food. However, for the population aged between 16 and 25, the percentage of no consumption of typical Chinese food during festival reach up to 30.95%. This means that young people don’t really care about the diet custom of traditional festivals (see Figure 28).

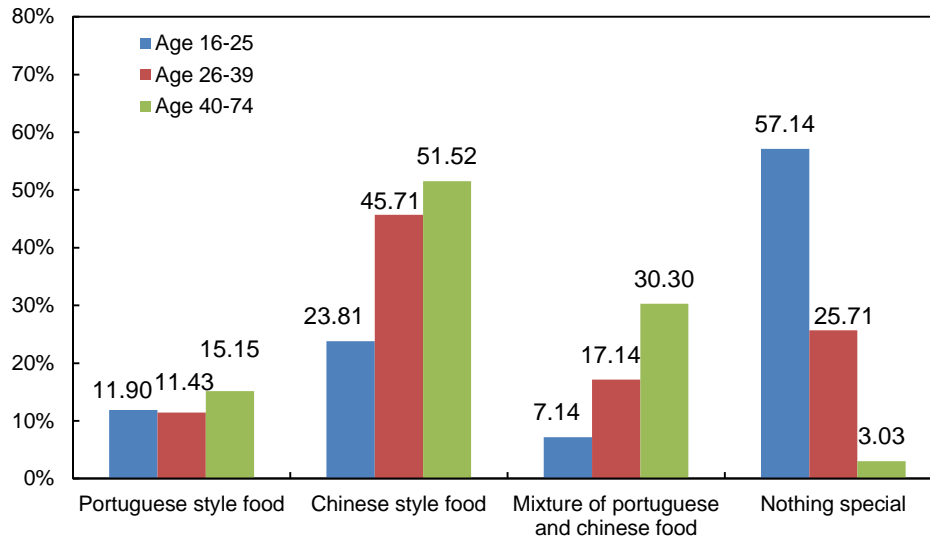


Fig. 27 - Relationship between "Food for Portuguese traditional festival" and "Age"

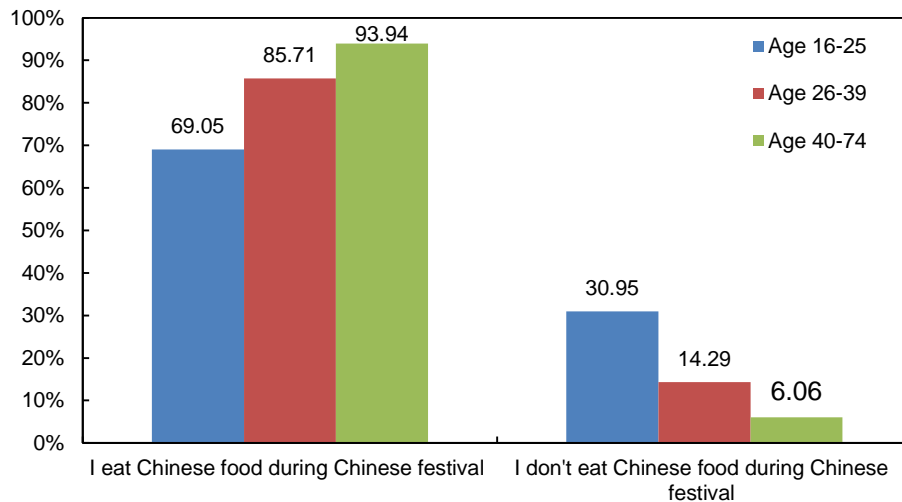


Fig. 28 - Relationship between "Consuming Chinese traditional food during Chinese festivals" and "Age"

Influence on health after eating Portuguese food:

For the influence on health after eating Portuguese style food, we consider three categories: positive influence, negative influence and no obvious influence. 70% of participants believe that no influence on health is observed.

"Influence on health after eating Portuguese food" & "Sex": Those who consider their health situation is influenced by Portuguese style food, 8.62% of male and 23.08%

of female hold a negative influence. No big difference between male and female is indicated regarding the positive influence (see Figure 29).

Positive influence principally refers to several aspects below. Firstly, participants consider their physical conditions are strengthened, this positive change maybe benefit from a balanced intake with an increase of consumption of fresh vegetables salad and cheese after immigration in Portugal. A lot of Portuguese dishes are salty and rich in energy, grilled food is frequently fatty and desserts are excessively sweet. These characteristics can increase the risk of obesity and cardiovascular related disease.

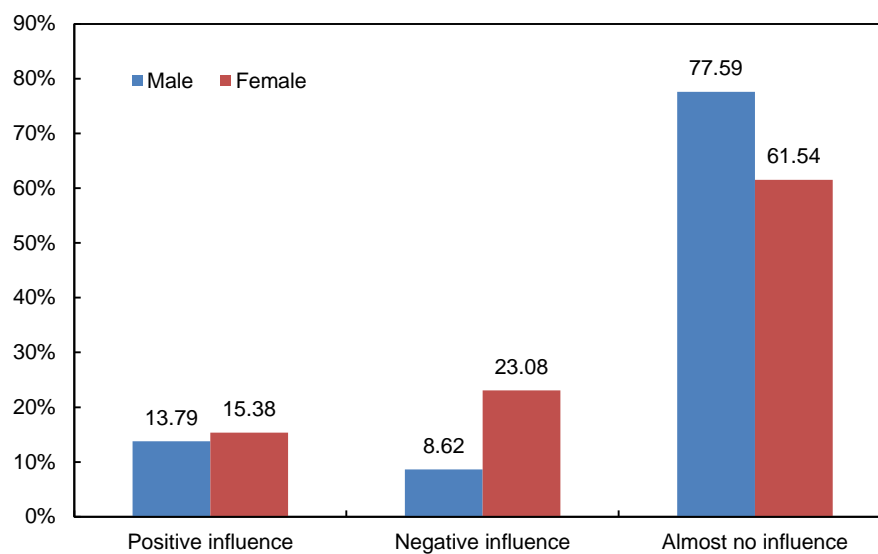


Fig. 29 - Relationship between "Whether there is an influence on health after eating Portuguese style food" and "Sex"

Regarding physical exercise, 12.3% of respondents express an increase on duration of physical exercise but 38.5% of respondents indicate a decrease. The increase of physical activities could be explained by more opportunities to walk. Porto and Lisbon are not as big as most of the cities in China. A majority of Chinese immigrants in Porto and Lisbon live near the work or study place. Therefore, walking is regarded as the best form of transportation [22]. The decrease of physical practice may due to the busy work and study, and therefore they don't have enough spare time to do physical exercise.

Analysis of Portuguese typical dishes consumption

Within the Food Frequency Questionnaire, 19 Portuguese typical dishes were listed to assess its frequency of consumption. According to the results of Spearman Correlation, the consumption frequency of nine Portuguese typical dishes are associated to immigrants' age, length of residence in Portugal, education level, duration in which their spouse has lived in Portugal and degree of self-reported integration in Portuguese society. In general, correlation coefficient scatter between 0 and 0.25 means no or minor related, between 0.25 and 0.5 means a fair degree, while coefficient scatter between 0.5 and 0.75 indicates a moderate relationship, above 0.75 represents an excellent correlation [23]. As age of immigrant increases, the consumption frequency of rissóis (patties), feijoada à portuguesa (stews in Portuguese style) and pudins caseiros (homemade puddings) decreased. Immigrants who have lived longer in Portugal have a lower consumption frequency of feijoada à portuguesa, rissóis, bacalhau (codfish), filetes de peixe-espada (sword-fish fillets) and crepe. But these immigrants consume more grilled salmon. Education degree relates positively with consumption frequency of bacalhau, Filetes de Peixe-Espada, grilled salmon and crepe. The duration that spouse of immigrant accompany has a negative relationship with the frequency of consumption of rissóis. The respondents who integrate deeply in Portuguese society express a relative high consumption frequency of feijoada à portuguesa, sardinha assada (grilled sardines) and bolos caseiros (homemade cakes) (see Table 5).

Tab. 5 - Spearman's Correlations between Portuguese dishes and Chinese immigrants

Correlations							
			Age	Years in Portugal	Education degree	Years of their spouse lived in Portugal	Integration degree
Spearman's rho	Feijoada à portuguesa	Correlation Coefficient	-.540**	-.346**	-.088	-.298	.295**
		Sig. (2-tailed)	.000	.000	.363	.066	.002
		N	110	110	110	39	110
	Rissóis	Correlation Coefficient	-.866**	-.536**	-.119	-.426**	.277**
		Sig. (2-tailed)	.000	.000	.217	.007	.003
		N	110	110	110	39	110
	Pudins caeiros	Correlation Coefficient	-.202*	-.114	-.050	.169	-.059
		Sig. (2-tailed)	.034	.236	.603	.303	.538
		N	110	110	110	39	110
	Bacalhau	Correlation Coefficient	-.057	-.352**	.692**	-.239	.024
		Sig. (2-tailed)	.552	.000	.000	.144	.805
		N	110	110	110	39	110
	Filetes de Peixe-Espada	Correlation Coefficient	-.038	-.211*	.236*	.076	-.001
		Sig. (2-tailed)	.696	.027	.013	.646	.990
		N	110	110	110	39	110
	Salmã Grelhado	Correlation Coefficient	.277**	.193*	.277**	.004	-.030
		Sig. (2-tailed)	.003	.044	.003	.982	.752
		N	110	110	110	39	110
	Sardinha assada	Correlation Coefficient	-.225*	-.134	.056	.162	.204*
		Sig. (2-tailed)	.018	.164	.562	.325	.032
		N	110	110	110	39	110
	Bolos caseiros	Correlation Coefficient	-.202*	-.017	.018	-.068	.597**
		Sig. (2-tailed)	.034	.860	.855	.681	.000
		N	110	110	110	39	110
	Crepes	Correlation Coefficient	-.344**	-.453**	.228*	-.195	-.096
		Sig. (2-tailed)	.000	.000	.017	.240	.320
		N	109	109	109	38	109

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Analysis of Chinese typical dishes consumption

Soup

Regarding the group of soup, immigrants experience a significant decrease in frequency of consumption of four kinds of soup (see Figure 30) after immigration. Particularly, 48% (53) of total participants indicate a downward trend on frequency of consumption of fish soup.

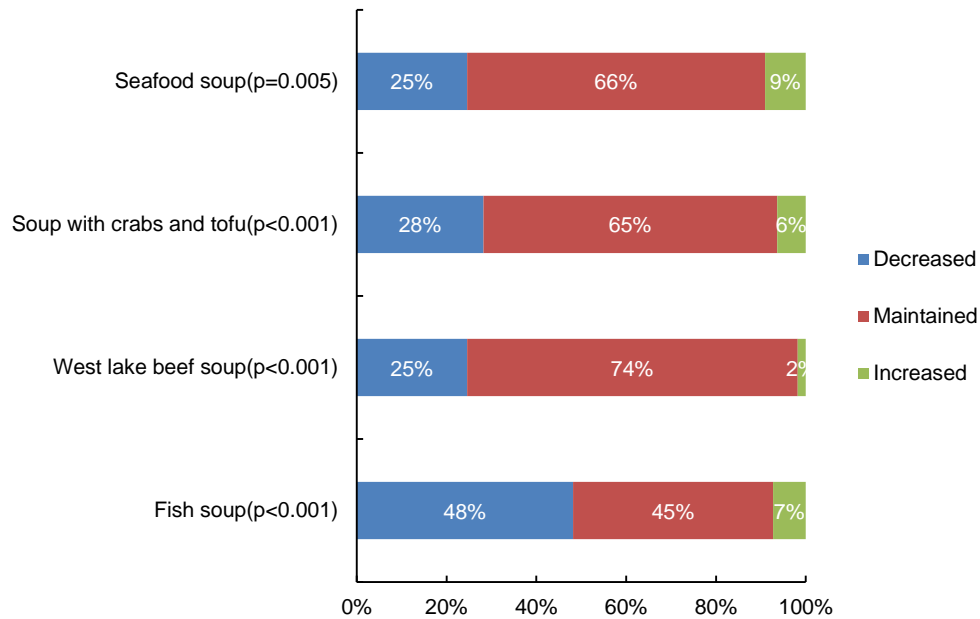


Fig. 30 - Changes in consumption of Chinese typical soup

Cold dishes

In terms of the cold dishes, frequency of consumption of Wined chicken and Jellyfish salad indicate a significant decrease after immigration. Especially for jellyfish salad, 54% of Chinese immigrants express a decreasing trend of consumption (see Figure 31).

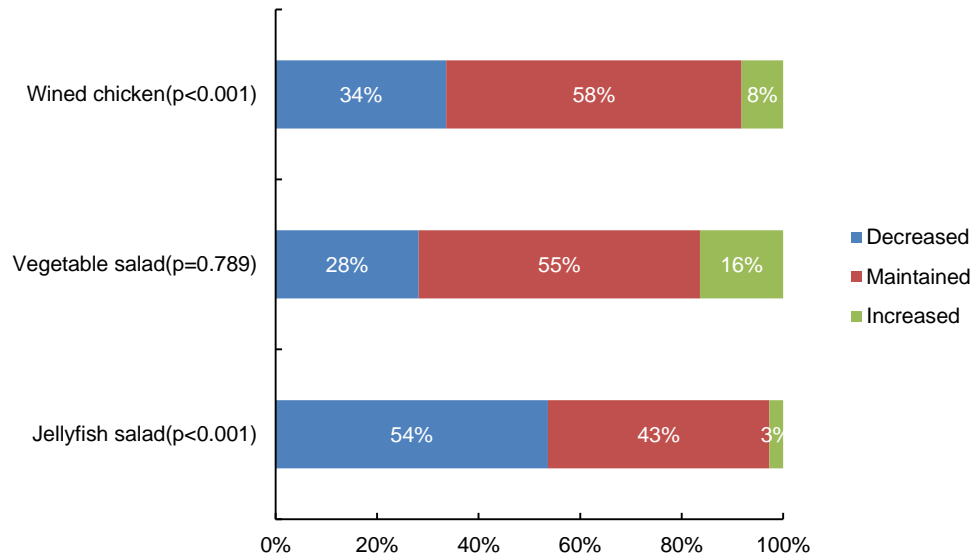


Fig. 31 - Changes in consumption of Chinese typical cold dishes

Main dishes

The frequency of consumption of 22 typical Chinese main dishes was also assessed before and after migration. Statistically significant differences in the frequency with which each dish was included in the participant's food habits were found for all of them (see Figure 32).

There was a general downward tendency for the participants' frequency of consumption of most dishes as 24% to 42% of respondents decreased the consumption of 18 (out of 22) dishes. For only consumption of 4 dishes (Stir-fried dried yellow croaker with spinach, Spicy stir-fried razor clam, Huadiao boiled crab and Fried periophthalmus) there were only between 16% and 21% of respondents who decreased their consumption frequency. On the other hand, in only 6 cases did the frequency increased with migration (Home-style tofu, Stir-fried fungus, Steamed scallops with garlic and fensi, Fresh soup with fish ball, Steamed mandarin fish and West lake fish in sweet sour sauce).

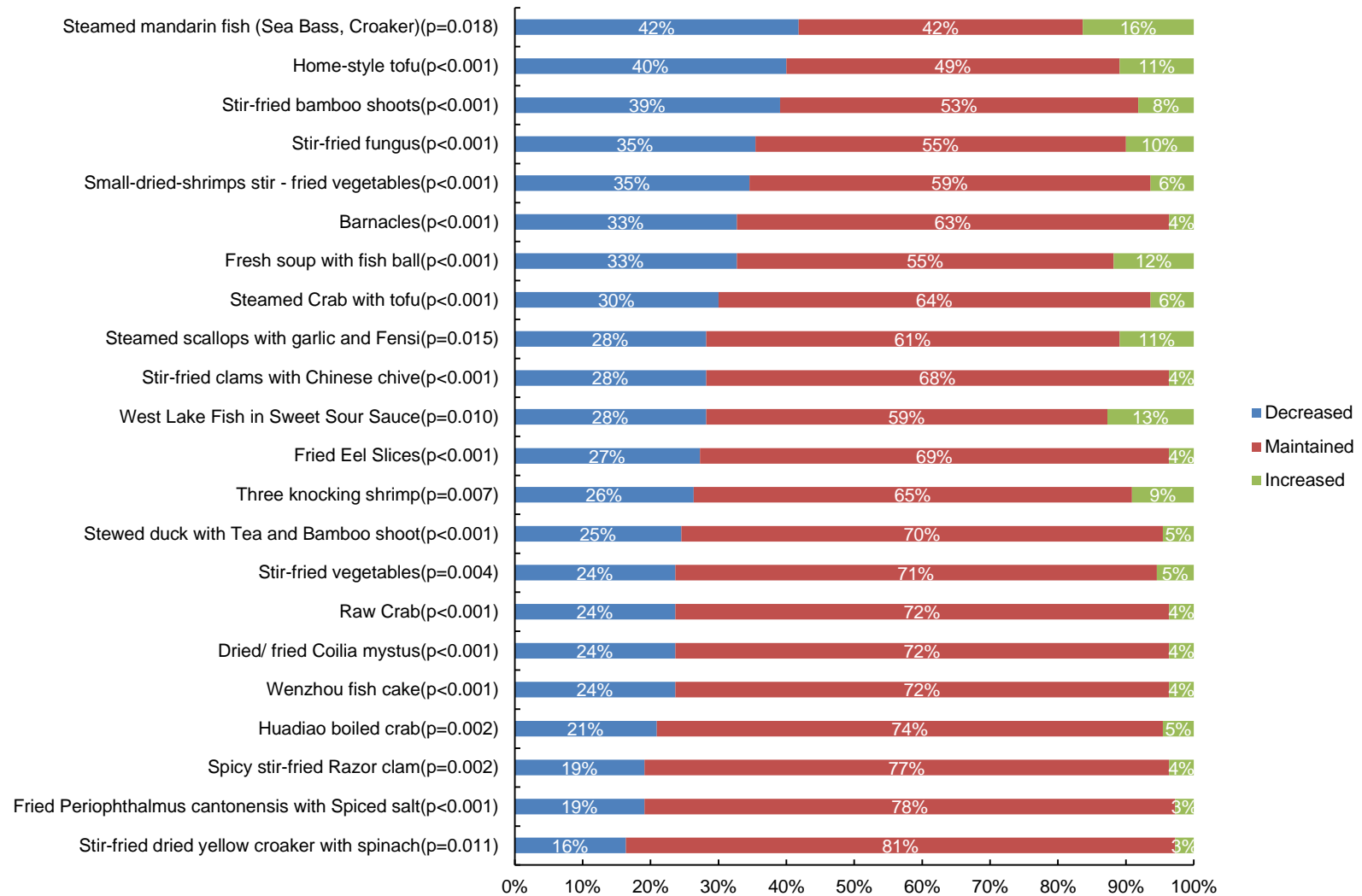


Fig. 32 - Changes in consumption of Chinese typical main dishes

Staple food

Staple food always plays an important role in Chinese daily diet for centuries, although most of the foods are made with rice and wheat flour, and they are cooked in various styles. According to the results of this study, we can found that only the frequency of consumption of steamed rice doesn't show a significant difference after immigration. As for other staple foods, the frequency of consumption of Wenzhou noodles and Wonton decreased significantly. Qingtian dumplings have more in common with wonton on the aspect of stuffing and experience a decrease in consumption in Chinese immigrants (see Figure 33).

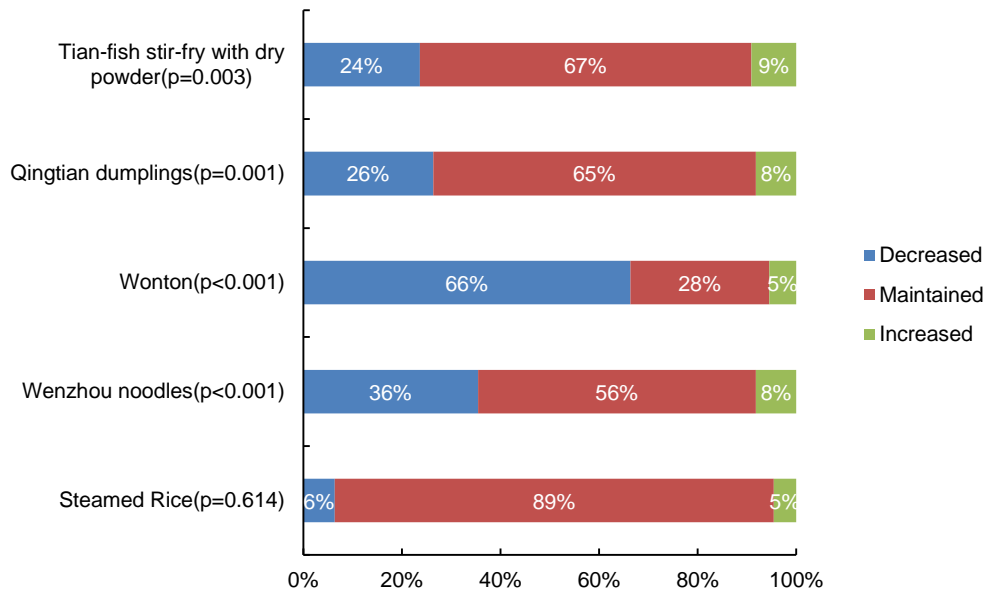


Fig. 33 - Changes in consumption of Chinese typical staple food

Snacks and Desserts

We can observe from the results that all of the snacks and desserts are consumed less often by Chinese immigrants after immigration, although 77% of respondents maintain their habits on consumption of Qingtian sugar cake (see Figure 34).

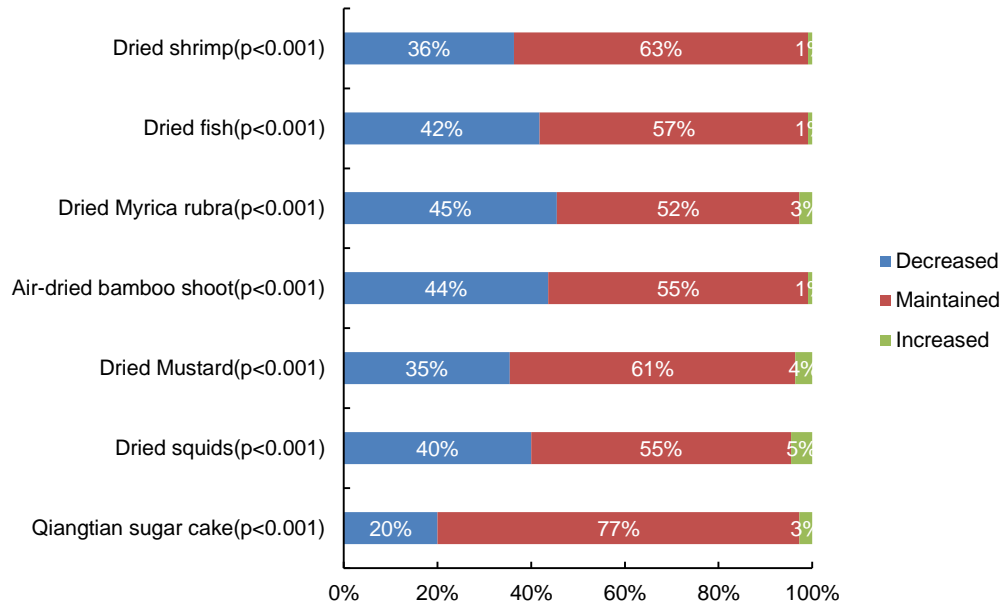


Fig. 34 - Changes in consumption of Chinese typical snacks and desserts

Analysis of specific food consumption

Grain products

Except the rice and breakfast cereal items, the frequency of consumption of other grain products presents a significant difference, especially for chips or French fries, bread and corn. The numbers of immigrants who increased the intake of chips or French fries and bread with cereals occupy 45% and 44%, respectively. 60% of respondents consumed more often white bread after immigration. As for boiled potato, 32% of immigrants indicate an increase of consumption after immigration (see Figure 35).

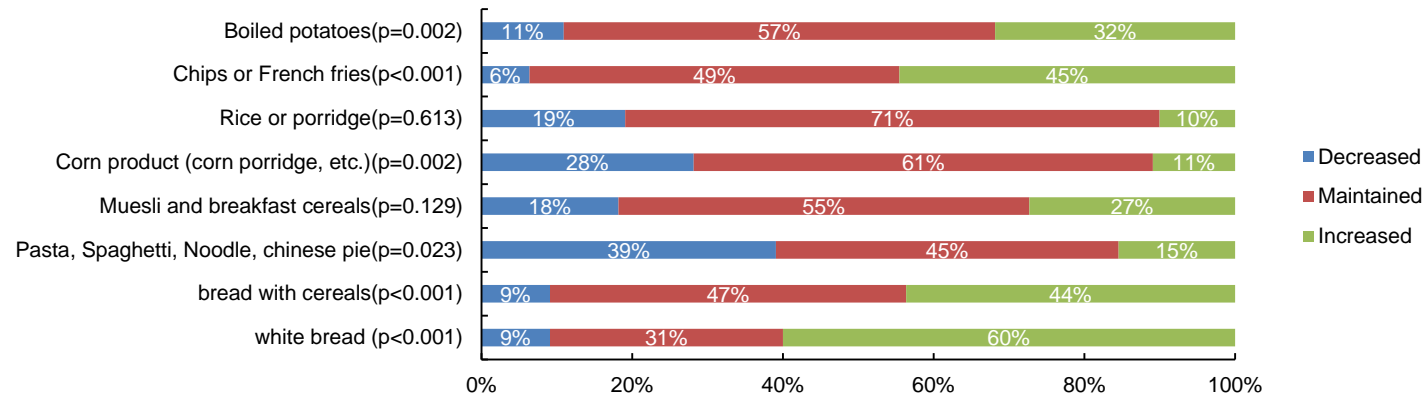


Fig. 35 - Changes in consumption of grain products

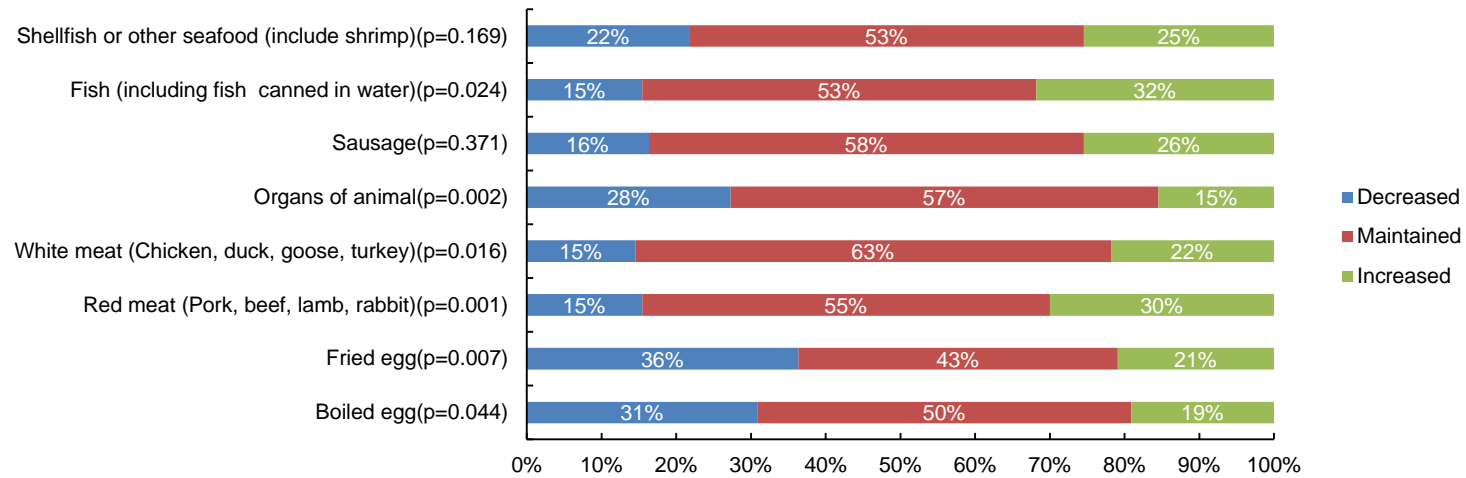


Fig. 36 - Changes in consumption of egg, meat and fish

Dairy products

Figure 37 illustrates the change of consumption frequency of dairy products. We can notice that the consumption of yogurt, flavored yogurt, and low-fat milk have experienced a dramatic increase after immigration.

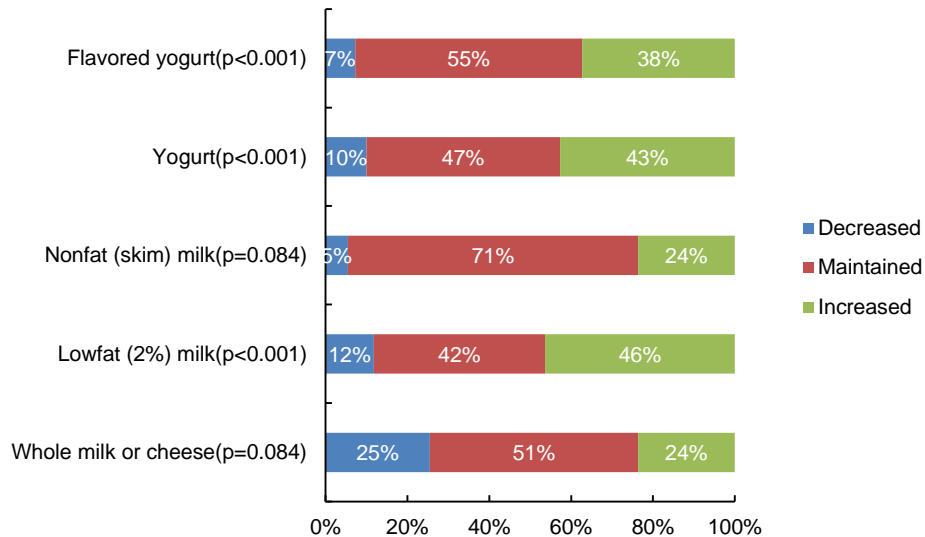


Fig. 37 - Changes in consumption of dairy products

Egg, Meat and Fish Group

Changes in consumption of animal foods were also observed and in the expected direction with 25% or more (25 to 32%) of respondents increased the consumption of shellfish or seafood, fish, red meat and sausage. Conversely, the consumption of eggs and organs decreased (see Figure 36).

Oils and Fats group

Figure 38 demonstrates an obvious difference of consumption of butter, olive oil and other oils. Almost half of respondents increased the frequency of consumption of butter after living in Portugal. Taking oils into account, a downward trend on consumption of other oils (rape seed oil, peanut oil and corn oil) can be observed, which is recorded by 40% of immigrants. Meanwhile, a marked increase of consumption of olive oil is expressed by 77% of immigrants.

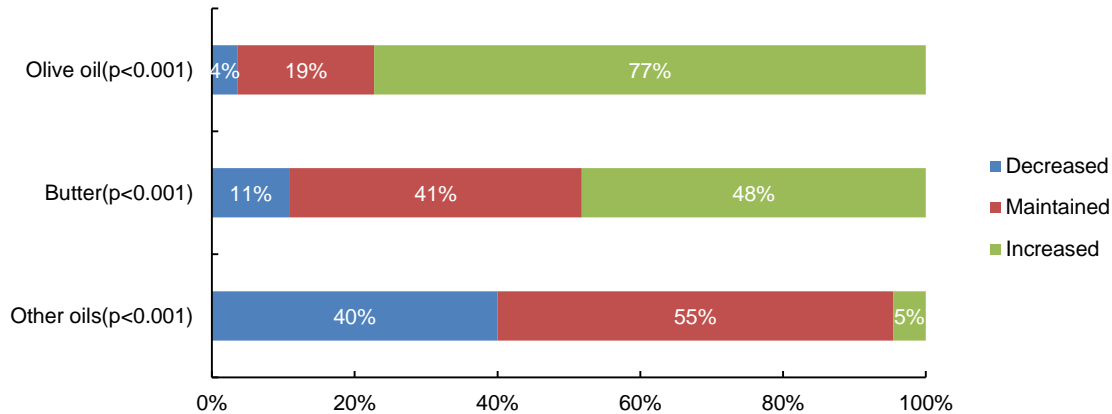


Fig. 38 - Changes in consumption of oils and fats

Vegetables

Frequency of consumption of olives, broccoli, sea vegetables, water lettuce, tuber vegetable, solanaceous vegetable and melon-vegetables show important changes in frequency of consumption. 35% of immigrants reported an increase of consumption of olives. The population who decrease the consumption frequency of sea vegetables and water lettuce accounted for 42% and 46%, respectively. Meanwhile, the downward trends of consumption frequency of tuber and melon vegetables are also observed clearly (see Figure 39).

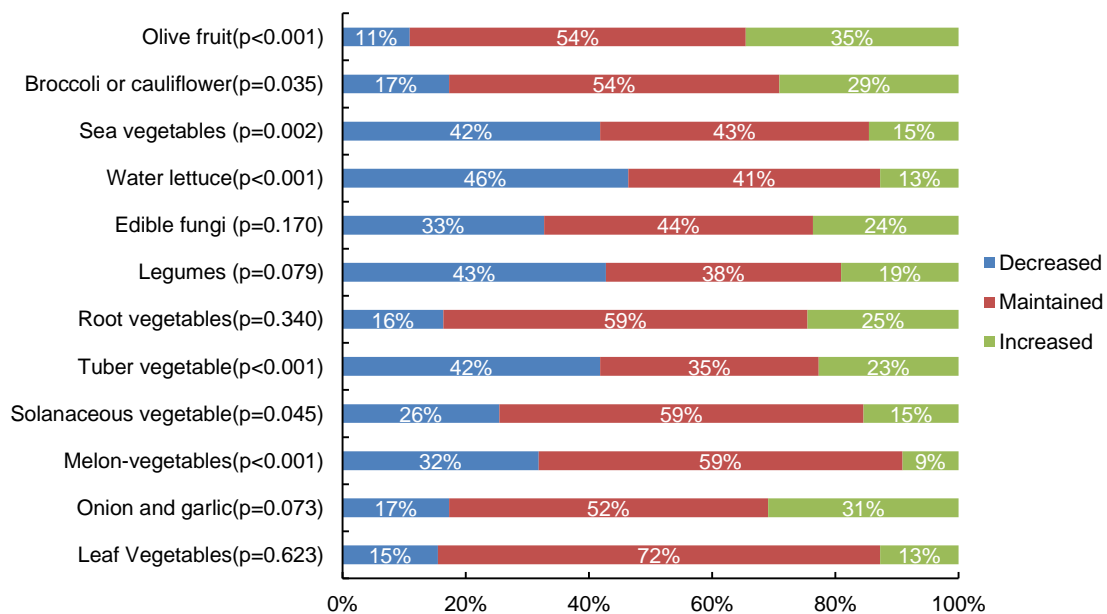


Fig. 39 - Changes in consumption of vegetables

Fruits

For the list of 24 fruits for 13 (Mango, Jackfruit, Tangerine, Plum, Blueberry, Strawberry, Pineapple, Coco, Kiwi, Grape, Peach, Banana, Apple) there were no significant difference in consumption, whereas for nuts, grapefruit, jujube, pitaya, lychee, melon and pear, there was a significant decrease. Additionally, consumption of lemon, cherry and orange have experienced a significant increase by 48%, 55% and 43% of total immigrants, respectively (see Figure 40).

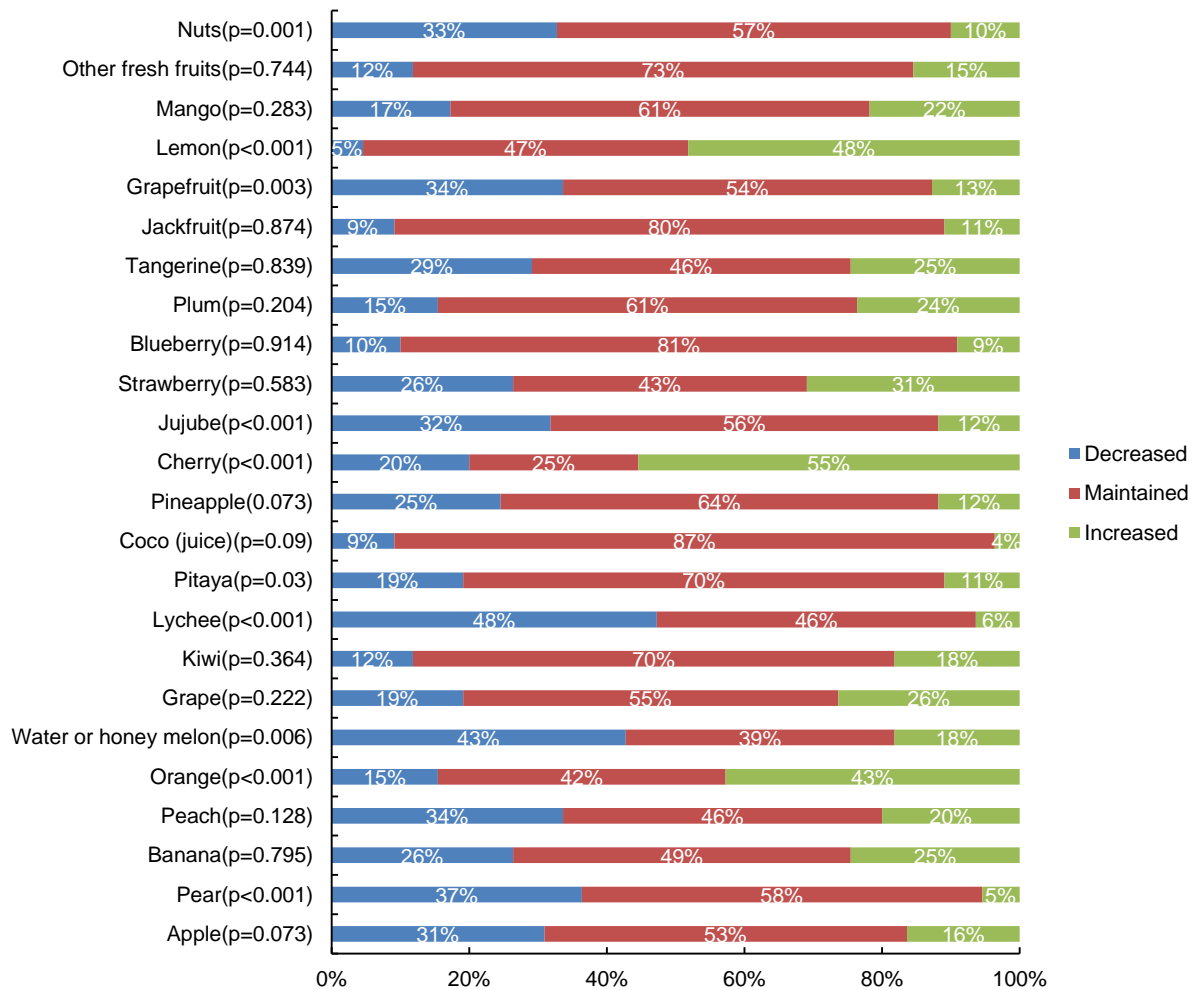


Fig. 40 - Changes in consumption of fruits

Sweets and cakes

Consumption of jam, milk desserts and chocolate demonstrate a significant difference after immigration. Specifically, consumption of milk dessert and chocolate increased, recorded by 44% and 51% of respondents, correspondingly (see Figure 41).

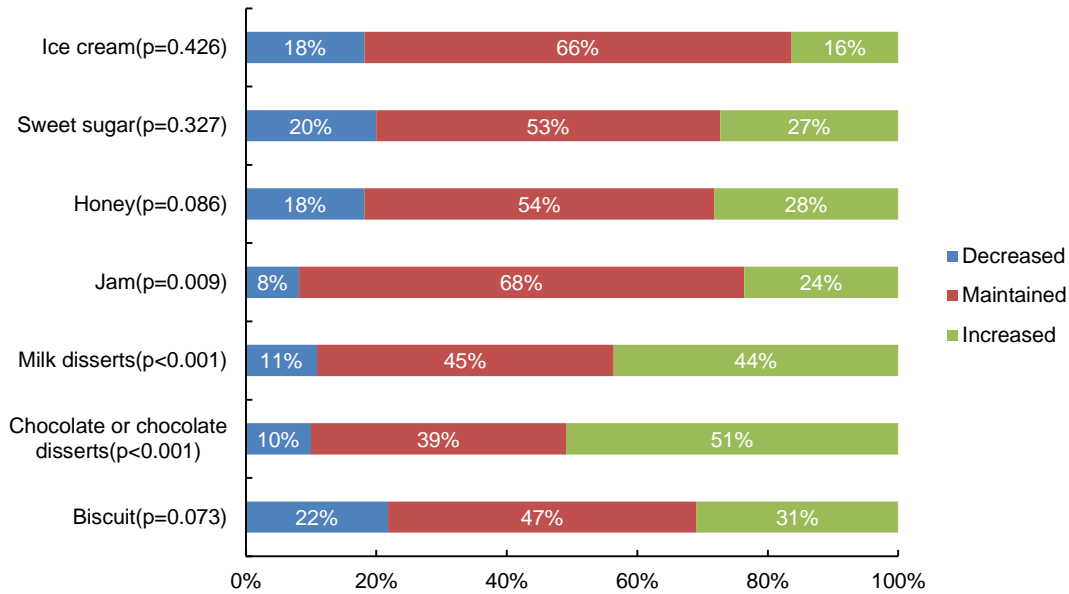


Fig. 41 - Changes in consumption of sweets and cakes

Drinks

Figure 42 indicates a significant difference between the frequencies of consumption of several drinks, as wine, natural juice, soya-bean milk, coffee and water. Porto wine is a unique feature of Portugal and 21% of immigrants started to drink it after immigration. Consumption frequency of red wine and white wine also experienced a dramatic increase, which is indicated by 45% and 32% of participants, respectively. Immigrants who consumed more often natural juice and coffee accounted for 40% and 49%, correspondingly. And soya-bean milk and tea consumption declined as indicated by 55% and 38% of immigrants, respectively.

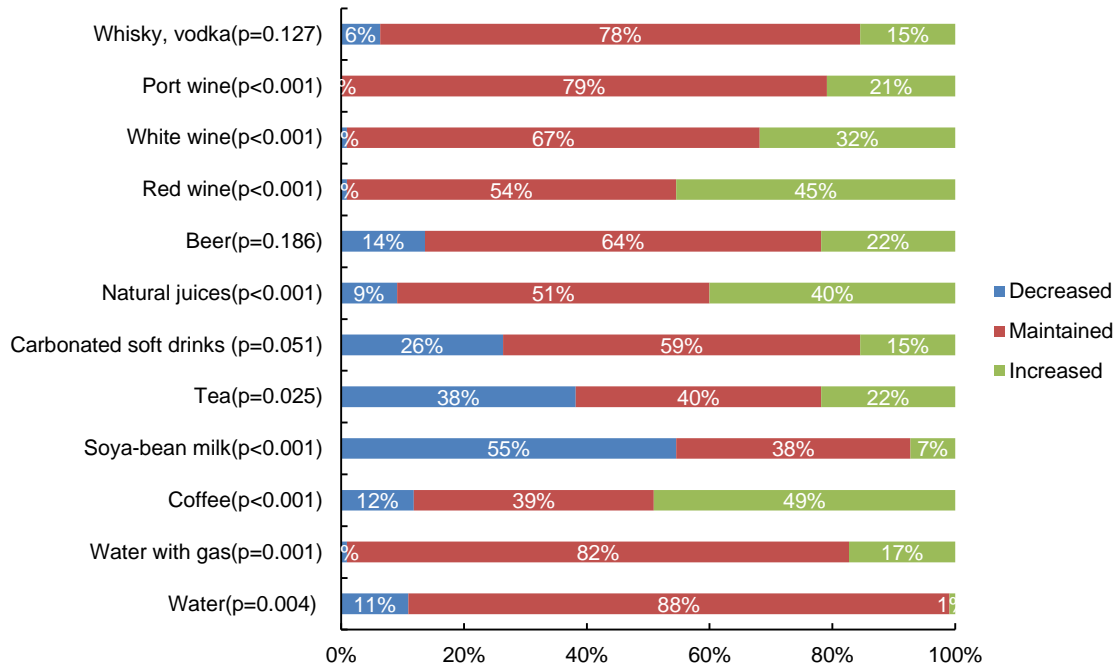


Fig. 42 - Changes in consumption of drinks

Daily food intake

Daily food intake in Portugal was recorded by the means of the 24-hour recall method. In order to assess daily food consumption, respondents were asked to report what they ate the day prior to the interview. Taking bedtime and the time to get up into account, 98 valid data are recorded in questionnaire. 77.3% of respondents stayed in bed extra time in the morning, the average of delay was 85.64 minutes. In terms of bedtime, 80.4% of participants reported a delay in going to sleep with an average extension of 104 minutes. Consequently, the reduction of sleeping hours of Chinese immigrants after immigration was obvious. The average number of daily meals increased slightly from 3.21 in China to 3.7 in Portugal and 45.5% of respondents express such increase. According to the survey, 78.2% of immigrants used to consume 3 meals per day in China, whereas, after they immigrated to Portugal, 56.5% of respondents reported more than 3 daily meals, 4 and 5 meals were mentioned more frequently. Considering sex, most male respondents consumed 3 or 4 meals per day. Women were more likely to eat 5 or 6 meals a day than men (see Figure 43).

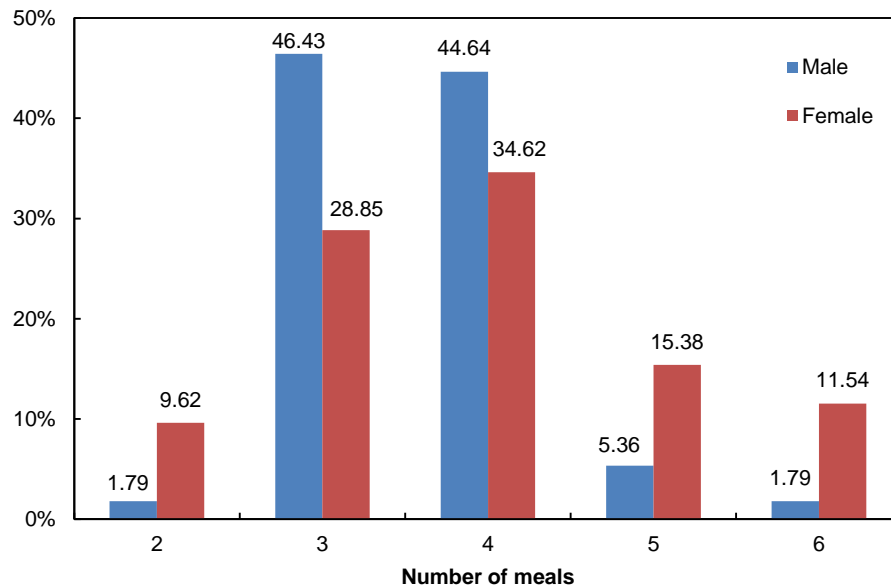


Fig. 43 - Relationship between "Number of meals which respondents consumed yesterday in Portugal" and "Sex"

Regarding the place of eating breakfast, 38.9% of immigrants have breakfast at home, but this figure increased to 65.5% after immigration. In Portugal, bread, milk, coffee, cheese, ham, biscuit and yoghurt usually served for breakfast, however in China, soya bean milk, boiled eggs, dumplings, porridge and Chinese vegetable pancake were eaten by most respondents. Before lunch, 8 respondents had the habits of eating snacks in Portugal, like several piece of nuts, a cup of coffee or tea. On the contrary, only two immigrants registered this preference when they were in China. Respecting lunch in China, all respondents chose Chinese style either consumed in school canteen or workplace. Nevertheless, only 57.7% of immigrant selected Chinese style dishes for lunch when they live in Portugal and two respondents had unusual lunch the day before they did the questionnaire, like kebab, bread, but normally, they also consumed Chinese dishes. Respondents who study or work in university usually consume Portuguese dishes in canteen of university. Additionally, almost all immigrants put off lunch time around one hour compared with the time in China, this may due to the acculturation [24]. After immigration, 40% immigrants eat snack during coffee break in afternoon, including fruit, biscuit, and coffee and simple pasta cooked in Chinese style. Respecting dinner in Portugal, 18.6% of immigrants are not used to eat meat or fish but give place to vegetables, fruits and dairy products. However, the situation in China was converse and the data increased to 45.5%.

Discussion

To our knowledge this is the first research carried out in Portugal aiming to assess food habits and food habit change of the Chinese immigrant community. This exploratory study indicates the degree of adaptation to the Portuguese society in association to the degree of satisfaction and self-reported integration, self-perceived economic situation, health status and length of residence of a sample of Chinese living in Portugal. Other researchers have found that young Chinese immigrants living in New York City have a higher Western dietary preference [25]. A research on changes of dietary pattern of Korean American in Los Angeles area concluded similarly that female consumed higher total numbers of servings of food than male [26]. The food habit change may due to the acculturation, which means a process of cultural change and psychological change including beliefs, religion, and language between individuals who have different cultural backgrounds [27].

Typical Chinese dishes

First of all, foods and ingredients for Chinese dishes are limited in Portugal, although some of them may exist in Chinese supermarket. In Porto, there is only one ethnic supermarket located near Lapa, the center of city; in Lisbon, 3 supermarkets exist in *Martim Moniz* area. Whereas, other destinations of Chinese migrants, as the United States, England, Canada and Spain, there are more Chinese ethnic supermarkets and stores, which increases the opportunity to obtain Chinese foods. For example in Canada, various selections of Chinese food are available in big Chinese supermarkets like T&T, and there is an overabundance of smaller Chinese ethnic stores like the Lucky Moose [8].

The downward trend consumption occurred on various types of food. When cooking fish soup in Chinese style, several traditional condiments are essential and all of them are only sold in Chinese supermarket. Wine chicken is a kind of famous Chinese cold dish and the Shaoxing yellow wine is absolutely necessary in cooking process. This kind of wine is only produced in Shaoxing area and has its own particular feature. Additionally, availability of jellyfish in Portuguese market is a challenging task. The unobtainable raw materials also have a major influence on the decrease of Chinese main dishes, for instance, bamboo shoots, barnacles, eel slices and crabs, which are foods widely available and popular. However, they are hard to find in Portugal. Qingtian dumplings and wonton are two important staple foods, rich in Chinese distinguishing features and

are very popular among people from south of China. The stuffing is a mixture of various ingredients, including several kinds of vegetables, meat and condiments. Furthermore, it is really difficult to access some materials, like taro, starch and leek, even if the Chinese ethnic supermarkets are located in the city. Regarding traditional snacks and desserts, myrica rubra and mustard are materials which also really difficult to obtain in Portuguese market.

Secondly, some cooking process is complicate and it usually needs a relatively long period of time. Normally, fish soup needs more or less 1-2 hours to cook for the purpose of fully penetration of flavor and nutrient into soup. The preparation of cooking Qingtian dumplings and wonton also requires certain skills. The dried myrica rubra and mustard are home-made traditional snacks, with the main ingredient dried in the sun, salted and then dried again. This procedure usually takes 5 to 6 days. According to the survey regarding the time spent on cooking, only 10.3% of participants spend more than 1 hour to prepare lunch or dinner. Therefore lack of time to prepare several typical dishes may contribute to its decreased consumption.

In addition to these two factors, some other reasons also play major a role in changing frequency of dishes consumption. The decreased consumption of fish soup probably due to the species of fish sold in Portuguese market which are different from the fish in Chinese market or are not familiar by Chinese consumers. In China, most people buy fresh vegetables, fish and seafood in country fair near home, as demonstrated by the 70% of Chinese immigrants who usually go the country fair in China. Besides, almost all the fish from river displayed in country fair are alive and are perfect main materials to cook fish soup. However in Portugal, due to few country fairs, a majority of immigrants need to go to supermarket or hypermarket which may be quite far away from their home and the fish is always dead. As staple food are concerned, the consumption of rice doesn't show a significant difference, because the rice is also considered as an important food to consume together with main dish in Portuguese daily diet, even though almost all of respondents presented the preference of rice which is grown in China. When it comes to the dessert Qingtian sugar cake, although 20% Chinese immigrants express a downward trend of its consumption, still 77.3% of total respondents maintained the consumption frequency due to the view that Qingtian sugar cake is generally consumed during special festivals, like spring festival or New Year's Day, and the fact that 81.82% of respondents prefer Chinese typical foods during traditional festival as in China.

Grain products

There is an old saying in China that breakfast is the most important meal of the day and should include various kinds of food, like congee, Chinese pie, eggs, vegetables, fruits and so on. Bread may be an alternative choice for young people who rush to work in the morning. On the contrary, in Portugal and other western countries, bread is always considered as a main and essential food in breakfast and coffee break time. This is the main reason that the consumption of bread shows a significant increase.

Corn is a kind of coarse cereal and considered as an important staple food by Chinese people, especially among the elderly. Corn is widespread and used in various ways, including corn porridge, corn pie and corn juice. Corn porridge, for example, is usually consumed for breakfast and this form of corn is regarded as the most popular corn food in China. In Portugal, corn is mainly consumed as a type of bread called broa, but it is not as popular as other grain food.

French fries and boiled potato are very common foods in Portugal and usually serve as a side dish in traditional Portuguese diet. So the increase of consumption of these foods in Portugal can be easily understood.

Dairy products

In China, demand for dairy products is lower than in Portugal or other western countries and the relative price of dairy products compare with the level of consumption in China is higher than the price in Portugal. Additionally, the safety of dairy products also influences its consumption. In Portugal, we can easily find whole milk, low-fat milk and skimmed milk. However, milk sold in most of the Chinese supermarkets is whole milk. These reasons may contribute to the upward trend on dairy product consumption of Chinese immigrants in Portugal.

Egg, meat and fish group

Considering the Chinese diet culture, in Europe, some uncommon foods like animal organs can be cooked as a delicious dish by Chinese people, especially those from the south of China. In Chinese traditional menu, spinach stir-fried liver of pig, stir-fried kidney, fried heart of chicken with salt and pepper are very popular. One of reasons that pig liver is so popular is its reasonable price [28]. After immigration, part of the

consumption of organs is replaced by meat due to their universality, high quality and reasonable price. This may be also the reason of the upward consumption of white meat and red meat after immigration. Another reason may be the absence of raw materials in most markets in Portugal.

Oils and fats

Several main reasons of consumption frequency changes on butter are described as follow. Chinese consumer marketing of butter is relative small. The types and brands are also limited in most of the markets or supermarkets. This results in an absence of competition and a high price of butter. Moreover, the fact that butter is not used in Chinese cuisine also influences the change of consumption frequency of butter.

Rape seed oil, peanut oil and corn oil are used frequently by most Chinese families. Not only because of low prices, but they are easy to found in markets. In addition, the original ingredient of oil is planted almost everywhere in China. All of these reasons lead to a wide consumption in China.

Olive oil in Portugal is very popular by both Portuguese and Chinese immigrants. By contrast, the consumption of olive oil in China is lower than in Europe. In China, olive oil is relatively expensive, especially the one imported from abroad. Additionally, the quality of olive oil varies from supplier or brands and consumers may have difficulty in choosing the best product. All of these reasons above can explain clearly the changing of consumption frequency of oils and fats.

Vegetables

Olive products are more common in Portugal, and 38 respondents increased their consumption of olives in Portugal. The edible sea vegetables commonly refer to seaweed and kelp; water lettuce such as lotus root and chufa; tuber vegetable for example, sweet potato, Chinese yam and taro. These kinds of food cannot be found easily in Portuguese markets, but only in Chinese ethnic shop. The difficulty of access explained well the obvious decrease of consumption. The melon-vegetable for instance are cucumber, loofah and pumpkin. Cucumber is common in China and Portugal, but the variety of cucumber is totally different. Most cucumbers in Portugal have a thick skin with less moisture and Chinese immigrants prefer the variety of cucumber that they used to consume in China. Pumpkin is a kind of vegetable that grows in a cool climate with lower

temperature, so it is commonly planted in north of China. People from the south are not used to consume pumpkin and southern typical dishes include pumpkin. In Portugal, sometimes pumpkin can be found in supermarkets, but it is not as popular as other vegetables. The taste of loofah is light and fresh, and it's popular in China but rare in Portugal.

Fruits

Lemon is included in several Portuguese dishes as a seasoning or may accompany roasted meat to relieve its greasy taste. Due to the great demand of lemon, it is very convenient to obtain lemon with high quality in Portuguese markets. On the contrary, in China, lemon is not an important ingredient in most Chinese traditional dishes. Chinese people don't drink a large quantity of red wine as well. The percentage of 48.2 of Chinese immigrants that increased the consumption of lemon in Portugal can be understood easily.

Lychee is a kind of subtropical fruit originate in the south of China and is a welcome fruit for Chinese people in summer. However in Portugal, it almost cannot be found in most supermarkets, neither in Chinese supermarkets. 47.3% of Chinese migrants reduced the frequency of consumption of lychee.

Pear is planted in a big scale in China and it is easy to find different varieties of pear with a lower price in Chinese markets. Besides, pear is considered as an ingredient of therapeutic diets to treat cough in traditional Chinese medicine. Although Portugal is one of the main producers of pear in Europe, only few varieties of pear can be found in markets. The reasons above may cause the decrease of consumption.

Cherry is mainly produced in Eurasia, America, Italy, Spain and Chile. Although Portugal produces cherries, a large quantity of cherry are imported from Chile and Spain. Compared to Portugal, cherry in China yields poorly. When cherry is sold in a large scale in market, the relative price compared with the salary in Portugal is lower than the price in China. This may explain why 55.5% of respondents demonstrate an increase consumption of cherry in Portugal.

Orange trees are widely grown in tropical and subtropical climates for their sweet fruit and are very popular both in China and Portugal. According to the statistic of the largest production of orange in 2012, Brazil, United States and China are the top three countries

of the production, among that, China produced 6.5 million tons in 2012 [29]. Although the orange is fruitful in China, distribution in various areas and province is not considerable and the quality of every variety cannot always be guaranteed. In Portugal, orange seems to occupy a large and conspicuous area in fruit zone in supermarkets, and is frequently promoted in packs of which can stimulate effectively consumption. Besides the direct consumption of oranges, drinking fresh orange juice is very common in Portugal. Therefore, the significant increases of consumption on orange can be explained well.

Further explanation of consumption frequency regarding fruits is the type of market organization. From the perspective of consumer's psychology, more space means more acquisition and therefore consumption. In western type supermarkets, consumers are free to choose and pick fruits and vegetables, whereas in country fairs, the seller keeps an eye on the products and even do not allow consumers to choose and pick the products. This may decrease purchasing desire and fruits consumption.

Nuts like peanuts, cashews and pistachios are most preferable in Chinese eating habits. These nuts can be found easily in supermarkets or country fairs and nuts contribute the main snacks consumed by Chinese people in China. Due to the influence of environment, Chinese immigrants started to eat bread or sweat cakes instead of nuts during coffee break time. Moreover, nuts in Portugal are not as popular as in China, and people can buy nuts in bulk in several big supermarkets or packaged nuts with a higher value in others supermarkets. Only during the Christmas, nuts are sold in a large scale as they are regarded as an important Christmas food in Portugal. Therefore, an obvious decline on nuts consumption is shown. Jujube originates in the central and south of China. It is preferably eaten dried as a snack, and also can be used as a medicinal material in Chinese medicine. Nevertheless jujube is grown in south of Europe, but it is difficult to find them in Portuguese market. Therefore, the Chinese immigrants who have the habit of eating jujube give up its consumption in Portugal.

Sweets and cakes

According to my observation and personal experience, I realized that a lot of bread are consumed together with cheese or ham but less with jam in Portugal, in other words, when selecting the food that accompany with bread, cheese is usually considered before jam. In China, jam is not very competitive as well. Firstly, there are abundant Chinese traditional foods which can replace jam, like fermented bean curd and homemade salted

vegetables. Secondly, in general, Chinese people prefer salty foods to sweet ones. Just like the Figure 44 shows that only 19.44% of respondents prefer sweet food to salty food and 13.89% of immigrants like both of them. Considering the influence of sex, only 25.86% of men prefer sweet food. That's why most (68.2%) of participants did not change their consumption frequency of jam after immigration.

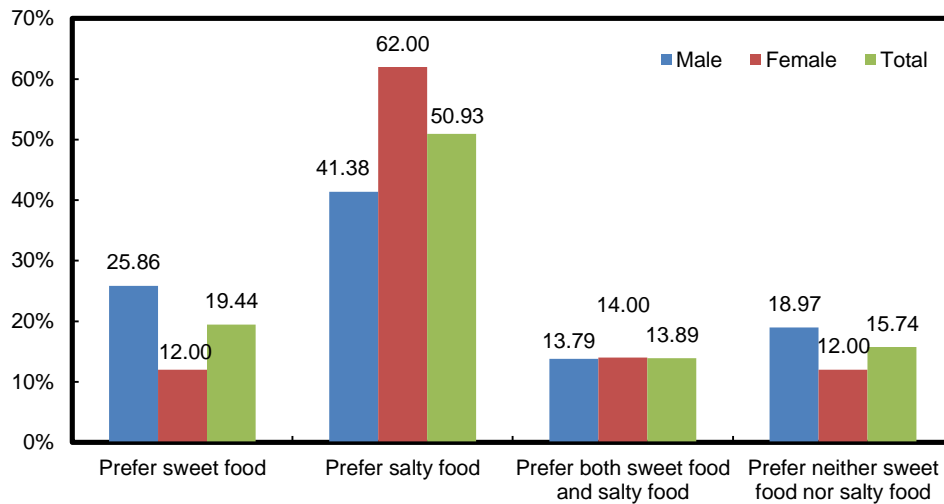


Fig. 44 - Relationship between "Preference of taste of food" and "Sex"

Dairy dessert can be found easily in coffee bars in Portugal. The pastéis de nata is one of the most representative desserts in Portugal and it is the best when accompanied by a cup of espresso. Except the pastéis de nata, other desserts made with milk are also popular during coffee break time or consume as a dessert after meals in Portugal. Besides, most desserts in Portugal are cheap for the majority of people. In China, milk desserts become more and more popular, although did not yet reached the popularity level of western countries. Generally, milk desserts are served in western-style bakery or coffee bar with a relative high price compared with the average wage. Therefore, they are more acceptable by young people and the population who has a preference for western culture.

Cocoa was introduced in Europe in 16th century. Nowadays, chocolate or chocolate desserts are attractive for Portuguese people and Chinese immigrants regardless of age and sex. In Portuguese markets, we can find various types and brands of chocolate with

a reasonable price. Chocolate and chocolate desserts also served as a snack during coffee break time. In Portugal, there are a lot of chocolate with a content of cocoa solids more than 60% and they are imported from different countries. However in China, on supermarket shelves, a great amount of chocolate is chocolate with additive, such as chocolate with milk and chocolate with nuts and fruits, just a small quantity of chocolate with high content of cocoa, and they are sold in imported foods area of supermarket. Generally, the foods which are imported from other countries are usually more expensive. These facts contribute to a low amount of consumption of chocolate in China and an increase frequency of its consumption in Portugal.

Drinks

The dramatic increase in consumption frequency of wine can be explained by the Portuguese active wine markets. Wine industry is one of the important pillar industries of Portugal. The wine produced in Portugal possesses a high quality due to the favorable climate and soil conditions. Portuguese wine, particularly the port wine and vinho verde, are attractive not only by native population, but also by Chinese immigrants. China is a country which has a long history of drinking culture, but Chinese wine markets developed slower than Europe. Although there are various Chinese wine in market, most of them has a medium quality, and high quality wines are usually imported with a relative high price. Despite the demand of wine consumption increases, only the population in good economic conditions can afford these wines. On the contrary, in Portugal, the high quality wines are relative inexpensive, and wine can be consumed as a part of daily expenses without a great burden for majority of habitants. On the other hand, boost of consumption of wine probably because the Portuguese wine drinking culture.

When it comes to consumption of natural juice, the situation in China is different from Portugal. In the past 10 years in China, consumption of natural juice continued to grow and become gradually a kind of fashion. The consumption of natural juice concentrated mostly in catering industry, especially in restaurant or stars hotels, it accounted for 3% to 8% of the consumption value of catering industry. Natural juice sold in restaurants is relative expensive compared with other drinks. It is also not common to use machine to squeeze fruit at home for great majority of Chinese people, and to sell natural juice are not widely available. Therefore, the consumption of natural juice is not yet a part of daily life of Chinese people [30]. By contrast, in Portugal, it is common to drink a glass of

natural juice with a reasonable price. Furthermore, machines to extract natural juice are also used at home by Portuguese people. The popularity of natural juice stimulates the increase of consumption of Chinese immigrants.

Chinese have several thousand years of history in drinking tea. Drinking tea is therefore a habit in Chinese daily life. Although there are various types of tea bags in Portuguese market, Chinese people would not like to choose them, because the tea which is packed in a small convenient bag normally doesn't possess a relative high quality. That's the reason that 38.2% of respondents decreased the consumption of tea after immigration.

Coffee was introduced formally to China since 1980's. As mentioned earlier, China has been known widely by tea drinking and owned a tea culture with a long history instead of coffee. In modern society, worldwide coffee consumption is huge. Every individual who drink coffee consume an average of 120 cups per year, but the data for Chinese people is less than one cup and even less than 5 cups in urban areas of China, although coffee market share is growing by 30% annually compared with the rate of 2% worldwide. From the general perspective, the population who has a strong awareness of westernization or an experience of living abroad probably prefers coffee consumption. In Chinese coffee market, the instant coffee is still a predominant coffee product comparing with fresh coffee, accounted for more than 90% of market share in 2009. The relatively high expense and low availability of machine also attribute to the fact that low consumption of fresh coffee for Chinese people. In China, fresh coffee is consumed frequently by the young and emerging middle class in coffee bar or restaurant. There exist few private coffee bars but coffee chains in China, such as Starbucks presently possess more than 300 outlets in mainland of China. Such kind of coffee outlets, Starbucks or Costa, is considered as a favorable hang out for coffee break of the population who has a relative strong purchase power [31]. In Portugal, fresh coffee drinking is an essential part of Portuguese daily life just like mineral water can be consumed everywhere. Due to the influence of Portuguese coffee drinking habits and the Chinese coffee consumption situation, a great increase of coffee consumption after immigration by Chinese immigrants was presented.

Soya bean milk is one of traditional drinks in China and is consumed since 2000 years ago [32, 33]. Soya bean milk is regarded as an important food in breakfast. Although not everyone has a machine at home, it is easy to buy outside. In Chinese diet concept, the

importance of soy bean milk is just like the coffee for Portuguese people. Indeed, it is possible to find soy milk in Portuguese market, but Chinese people much prefer fresh-brewed soy milk to packed soy milk that is displayed on shelves. This is maybe the reason of decrease of soy bean milk consumption after immigration in Portugal.

From the overall perspective, the increase of consumption of high energy density foods, like meat, sweet dessert, chocolate, milk and chocolate dessert, less consumption of some vegetables and decrease in physical activities may contribute to the increase of weight of half immigrants. There is a positive relationship between weight changes and length of residence which can also be attributable to age increase. The same conclusion was found in a study about the influence of length of residence on body mass index (BMI) among migrants population in US. Controlling for other factors, like demographic data, consumption of fruit and vegetable, smoking and alcohol drinking, in addition to findings of the length of residence in the United States was associated positively with BMI, foreign- born individuals possess a lower BMI than those were born in US [34]. The phenomenon of weight gain in Portugal was not as obvious as in US, this may due to the benefit of the Mediterranean-style diet which is consumed in Portugal. Although 65.5% of respondents recorded a change of diet pattern, 69.1% of Chinese immigrants prefer Chinese style diet, and actually a majority of them consumed Chinese food more than Portuguese styles. The high density of Chinese neighbors also has a positive effect on remaining the traditional Chinese eating habits, because there is a custom of sharing a dish with others in Chinese eating pattern, therefore, an aggregation of Chinese people can enhance the spirit of cooking and consuming Chinese traditional dishes. The Chinese community in Vila de Conde and Martim Moniz are in accordance with this situation.

The confidence of food safety was also considered as an important factor when talking about the consumer behavior on foods. In circumstance of current Chinese food market, the confidence index of Chinese people concerning the safety of native foods demonstrated an ever-decreasing tendency. The constantly emerging of scandal generated more discredit about food supply. For example, the scandal of Chinese milk contamination in 2008 and the crisis that Shanghai Hushi Food Co. provided the Expired-Meat to McDonald's and KFC restaurant chain was exposed in July 2014 [35]. Chinese consumers are losing their trust in some food production processes and they desire to enhance more transparency in production and distribution channels. Accordingly

Chinese people seek foreign food brands that they believe are superior to local products, like baby formula [36]. Chinese consumer's concept toward the consumption of food include three essential factors: safety, high nutritive value and reasonable price. Safety, namely the guarantee of food quality is considered as the most important factor. Nowadays, food consumption market has rapidly internationalized, and retailers and industries purchase the foods all over the world, causing an accessible way to obtain foods from abroad. Meanwhile, compared with China, the supervision and regulation system of food industry in EU is more effective and advanced [37]. The integration of these factors stimulates the consumption of imported food in Chinese markets. Hence Chinese immigrant in Portugal consumed naturally the foods which are regarded safer and healthier more frequent, such as fresh vegetables, dairy-food, wines and olive oils, those win more Portuguese consumers' trust [38].

Apart from the direct analysis of the survey results, some Chinese interviewees contributed with a more intensive participation, reporting some personal experience. A difficult living situation in Portugal was perceived by most of Chinese immigrants, such as the highly qualified intellectuals who came alone to Portugal and engaged in scientific pursuit and the businessman who undertook the mission of exploring the Portuguese market. The immigrants from this community usually bear more stress and pressure from academic research or physical overwork. They reported that a consumption of highly palatable foods have a positive effect on stress relief, for instance, sweetened and energy-dense foods. Research verified this association that the migration-related stress selectively boosted fat intake and energy density. Such trend in eating pattern may increase the possibility of chronic disease in this Chinese immigrant population [39, 40].

Conclusions

Based on the investigation, certain conclusions regarding food habits consumption of Chinese immigrant population in Portugal can be drawn.

Chinese immigrants who have a higher degree of perception of integration on Portuguese society are much healthier, more satisfied with their lives, and are more proficient in Portuguese language. As we mentioned before, elder people show lower preference on eating out and immigrants with higher level of education eat out more frequently than less educated ones. Regarding the place of eating out, Portuguese restaurants were selected as the most popular place. More than half of the total immigrants admitted an increase of weight after immigration, and those who have lived in Portugal longer weigh more than before. 70% of Chinese immigrants reported that no obvious influence on health after eating Portuguese food. Slightly over half of respondents considered their economic conditions improved and the number of pessimist in terms of economic condition increases as the length of residence increases. Regarding shopping habits, a majority of Chinese immigrants is used to buy food in supermarket and hypermarket in Portugal instead of country fair in China. More than half of Chinese respondents admitted change in their eating habits after immigration, specifically young immigrants showed an intensive degree of change than elderly. Most Chinese immigrants preserved the traditional Chinese food habits to a large extent, not only to be seen in the preference of Chinese style food, but also on the choice of food in traditional Chinese festivals. Snacks are welcome for Chinese immigrants no matter in China or in Portugal, and woman presented more interest on snacks consumption than man.

Taking consumption of Chinese typical dishes into account, soup, snack, dessert and all kinds of main dishes were consumed less by Chinese immigrants after immigration. Only the consumption of vegetable salad and steamed rice were not reported a significant difference. Considering the specific food products overall, the frequency of most grain and starchy food consumption was changed, among that the intake of potato and bread increased while a lot of respondents reduced the intake of corn product and noodle. Except for the nonfat and whole milk, other dairy products were consumed more often after immigration. Although the intake of eggs and organs of animals declined, the consumption of meat and fish increased. As expected, the consumption of butter and olive oil increased while the intake of other oils experienced a decrease. In terms of the intake of vegetables, olives and broccoli demonstrated a rising trend, meanwhile, the consumption of sea vegetable, water

lettuce, tuber vegetable and melon vegetable went down. The variation of fruits consumption were obvious, and among the various fruits, the increase of lemon, cherry, orange intake and the decrease of nuts, jujube, lychee, pear consumption cannot be ignored. In category of sweets, in addition to a dramatic increase of consumption of milk dessert and chocolate, the intake of jam also experienced a slight increase after immigration. The intake of wine, natural juice and coffee increased, but consumption of tea and soya-been milk decreased significantly.

Additionally, a slight increase in the number of daily meals was observed apparently, especially due to the influence of western food culture, and the habit of having tea break begins to play an important role in life of Chinese immigrants.

Future Research

Consumer behavior towards food is very complex and determined by emotions, motives, attitudes and awareness of nutritional knowledge. Based on the principal target of increasing the healthy food intake and enhancement of fitness level of Chinese immigrant, it is necessary to evaluate the perception and awareness towards nutrition knowledge and food safety of Chinese immigrant in Portugal. In December 2014, food labels in Portugal were changed by addition of nutritional information and a complete ingredients list [41]. This positive measure will be bound to influence the consumption behavior and food habits of Chinese immigrant.

In addition to the investigation of the food consumption frequency change, the difference of consumption portion size is also worthy of consideration and it aims to identify the change of intake of energy, protein, fat, and other nutrients. Comparing BMI index and the change of disease risks, like CVD (Cardiovascular disease). Dietary Guidelines for Healthy Americans in 1995 indicated that BMI greater than 25 is considered as moderately overweight and BMI greater than 29 means a severely overweight. And the World Health Organization (WHO) recommended cut offs for Asian and the norm of overweight declined from 25 to 23 [26]. Therefore, longitudinal data are needed to explore whether there is a causal relationship between the change in dietary patterns and CVD risk among Chinese immigrants.

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Appendix 1 Questionnaires in English version

Appendix 1.1 Questionnaire of personal characteristics and food habits

No. _____

Date: ____/____/2014

SECTION I Socio-demographic Characteristics

Aim of this section of questionnaire: to understand the basic socio-demographic information of a Chinese immigrant living in the area of Porto and Lisbon, in order to understand their personal data, economic and social status.

Personal Data:

1. Sex: F _____ M _____
2. Age: ____ years
3. Place of birth _____
4. Civil status: Single _____ Married _____ Divorced/ Separated _____ Widowed _____
5. Where were you living before you came to Portugal? _____
6. How many years have you lived in Porto/Lisbon? _____
7. Have you lived in another city of Portugal?
Yes _____ No _____
If yes, how many years have you lived there? _____
8. Have you lived in another country (in addition to China and Portugal) for longer than one year?
Yes _____ No _____
9. What's the maximum degree that you have completed?
____ Below junior high school degree
____ Junior high school degree
____ High school degree
____ Bachelor degree
____ Master degree
____ PhD degree
10. What's your occupation? _____
• Is it the same occupation as in China? Yes _____ No _____
• If not, what was your previous occupation in China? _____
11. What was/ were the reason(s) that prompted you to come to live in Portugal?

12. Did you come alone?

Yes_____ No _____

- If you are married, does your spouse live in Portugal now? If yes, how many years has she/ him been lived in Portugal?

13. Considering the overall aspects, do you think yourself to be integrated in Portugal?
(Such as living conditions, local culture, eating patterns, etc.)
(Please answer this question with using a scale from 1 to 5, 1 means not integrated at all, and 5 means fully integrated)

Not integrated at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Fully integrated

14. How about your Portuguese language skills?

- _____ I understand nothing about Portuguese language
- _____ I can understand and speak some simple words
- _____ Basically, I can use Portuguese language on daily communication
- _____ I can grasp and control Portuguese language and communicate fluently with the native speakers
- _____ I am proficient in Portuguese-speaking

Economic and social status:

15. How do you evaluate your present economic status when it is compared with the one you had in China? Has it get improved or worsened?

16. Do you provide economic support to your family or relatives who lived in China?

17. Do you have your own house in Portugal?

18. Do you satisfied with your present living status (including economic and social aspects)? Why?

19. In general, how often do you usually back to China? When did you back to China last time? Generally, how long do you usually stay in China?

-
20. Would you like to return to China forever? If yes, when do you expect to return?
And why?

SECTION II Cooking and food consumption characteristics

Aim of this section of the questionnaire: to understand the attitude and habit on food consumption of Chinese immigrants in Portugal.

1. In general, who is responsible for cooking in your home in Portugal? And in China?

2. Who is usually in charge of buying food in Portugal and in China?

3. Where do you usually obtain the foods for consumption in Portugal?

- ☐ Supermarket (such as Froiz)
- ☐ Hypermarket (such as Continente)
- ☐ Mini-market/grocery/specialist shops
- ☐ Country fair(Market)
- ☐ Ethnic shop (Chinese store/ supermarket)
- ☐ Obtain directly from manufacturer
- ☐ Obtain directly from my own fields

4. Where do you usually obtain the foods for consumption in China?

- ☐ Supermarket
- ☐ Hypermarket
- ☐ Mini-market/grocery/specialist shops
- ☐ Country fair(Market)
- ☐ Obtain directly from manufacturer

☐ Obtain directly from my own fields

5. Generally, how long do you usually take on food preparation for one meal (including breakfast, lunch and dinner)?

6. Do you like eating ready or pre-cooked food? And do you usually buy them? If yes, how often and what kind of this type of food do you prefer?

7. Regarding the question of the extent of the changes in eating habits (it means the changes from Chinese style to Portuguese style) since moving to Portugal, please evaluate yourself from your own perspective. (Please answer this question with using a scale from 1 to 5, 1 means not changed at all, and 5 means changed totally)

Not changed at all ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 Changed totally

- What kind of food do you prefer now? Chinese food or Portuguese food?
And why?

8. In general, how many traditional Chinese meals do you consume per week?
And why?

9. Approximately, how many times do you eat out per month? What kind of place (Example: canteen, restaurant, café, etc.) and food (Chinese food, Portuguese food, etc.) do you usually choose to eat?

During some Portuguese traditional festivals (ex: O Natal), do you have some special meals or foods to celebrate the festival? Which kind of food do you prefer? Chinese style or Portuguese style?

10. During some Chinese traditional festivals (ex: Spring Festival), do you usually have the Chinese traditional meals or foods to celebrate the festival?

11. Do you like to eat salty foods? And sweet foods? Is there any change since you moved to Portugal?

12. Are you used to eat snacks between meals? What kind of snacks you prefer to consume? In China and in Portugal, respectively.

SECTION III Health Status

Aim of this section of questionnaire: to understand the physical health status of Chinese immigrants in Portugal, and evaluate the changes of their state of health since they moved to Portugal.

1. Could you please describe your present health status?

_____ Worse _____ Not good _____ Not bad _____ Very good

Compared with the health status when you lived in China, does it become better or worse? If there are changes, could you please describe them?

2. Could you tell me your weight and height? And are there any changes comparing with the ones you have in China?

3. Do you think the foods you consume in Portugal have some influences on your health? If so, could you please specify the influences you referred?

4. How often do you usually exercise? What kind of the physical exercise do you prefer? And how much time do you spend for each exercise? In China and in Portugal?

In China:

In Portugal:

Appendix 1.2 Food frequency questionnaires

Food frequency questionnaires (FFQ) are designed to assess habitual diet by asking about the frequency with which specific food items are consumed by the Chinese immigrants who live in Portugal. This questionnaire consists of 9 food groups.

1. Grain Products (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
White bread					
Bread with cereals					
Pasta, Spaghetti, Noodle, chinese pie					
Muesli and breakfast cereals					
Corn product (Broa, etc.)					
Rice or congee					
Chips or French fries					
Boiled potatoes					

Grain Products (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
White bread					
Bread with cereals					
Pasta, Spaghetti, Noodle, chinese pie					
Muesli and breakfast cereals					
Corn product (Broa, etc.)					
Rice or congee					
Chips or French fries					
Boiled potatoes					

2. Dairy Products (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Whole milk or cheese					
Lowfat (2%) milk					
Nonfat (skim) milk					
Yogurt					
Flavored yogurt					
Dairy Products (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Whole milk or cheese					
Lowfat (2%) milk					
Nonfat (skim) milk					
Yogurt					
Flavored yogurt					

3. Egg, Meat and Fish Group (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Boiled egg					
Fried egg					
Red meat (Pork, beef, lamb, rabbit)					
White meat (Chicken, duck, goose, turkey)					
Organs of animal					
Sausage					
Fish (including fish canned in water)					
Shellfish or other seafood (include shrimp)					

Egg, Meat and Fish Group (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Boiled egg					
Fried egg					
Red meat (Pork, beef, lamb, rabbit)					
White meat (Chicken, duck, goose, turkey)					
Organs of animal					
Sausage					
Fish (including fish canned in water)					
Shellfish or other seafood (include shrimp)					

4. Oils and Fats (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Olive oil					
Other oils					
Butter					
Oils and Fats (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Olive oil					
Other oils					
Butter					

5. Vegetables (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Leaf Vegetables(spina ge, lettuce, cabbage, etc)					
Onion and garlic					

Melon-vegetables (cucumber, loofah, pumpkin, etc.)					
Solanaceous vegetable (tomato, pepper, chilli, eggplant, etc.)					
Tuber vegetable (sweet potato, Chinese yam, taro , etc.)					
Root vegetables (radish, carrot, etc.)					
Legumes (peas, green beans, soy bean, etc.)					
Edible fungi (mushroom, agaric, etc.)					
Water lettuce (lotus root, chufa, etc.)					
Sea vegetables (nori, kelp, etc.)					
Broccoli or cauliflower					
Olives					

Vegetables (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Leaf Vegetables(spina ge, lettuce, cabbage, etc)					
Onion and garlic					
Melon-vegetables (cucumber, loofah, pumpkin, etc.)					
Solanaceous vegetable (tomato, pepper, chilli, eggplant, etc.)					
Tuber vegetable (sweet potato, Chinese yam, taro , etc.)					
Root vegetables (radish, carrot, etc.)					
Legumes (peas, green beans, soy bean, etc.)					
Edible fungi (mushroom, agaric, etc.)					

Water lettuce (lotus root, chufa, etc.)					
Sea vegetables (nori, kelp, etc.)					
Broccoli or cauliflower					
Olives					
6. Fruits (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Apple					
Pear					
Banana					
Peach					
Orange					
Water or honey melon					
Grape					
Kiwi					
Lychee					
Pitaya					
Coco (juice)					
Pineapple					
Cherry					

Jujube					
Strawberry					
Blueberry					
Plum					
Tangerine					
Jackfruit					
Grapefruit					
Lemon					
Mango					
Other fresh fruits					
Nuts					
Fruits (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Apple					
Pear					
Banana					
Peach					
Orange					
Water or honey melon					
Grape					
Kiwi					
Lychee					
Pitaya					
Coco (juice)					
Pineapple					

Cherry					
Jujube					
Strawberry					
Blueberry					
Plum					
Tangerine					
Jackfruit					
Grapefruit					
Lemon					
Mango					
Other fresh fruits					
Nuts					
7. Sweets and cakes (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Biscuit					
Chocolate (bar or powder) or chocolate desserts					
Milk desserts(Puding, etc.)					
Jam					
Honey					
Candy					
Ice-cream					

Sweets and cakes (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Biscuit					
Chocolate (bar or powder) or chocolate disserts					
Milk disserts(Puding, etc.)					
Jam					
Honey					
Candy					
Ice cream					
8. Drinks (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Water					
Water with gas					
Coffee					
Soya-bean milk					
Tea					
Carbonated soft drinks (coke, 7-up)					
Natural juices					
Beer					
Red wine					
White wine					

Port wine					
Whisky, vodka					
Other drinks					
In the food item of "Water", if set a bottle of mineral water (500mL/bottle) as an unit, in China, how many bottles do you usually drink? _____					
Drinks (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Water					
Water with gas					
Coffee					
Soya-bean milk					
Tea					
Carbonated soft drinks (coke, 7-up)					
Natural juices					
Beer					
Red wine					
White wine					
Port wine					
Whisky, vodka					
Other drinks					
In the food item of "Water", if set a bottle of mineral water (500mL/bottle) as an unit, in China, how many bottles do you usually drink? _____					

9. Fast Foods (eating frequency in Portugal)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Humburger					
Pizza					
Others					
Fast Foods (eating frequency in China)					
	The average intake frequency				
Food Item	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Humburger					
Pizza					
Others					

Appendix 1.3 Questionnaires of consumption frequency of Portuguese and Chinese typical dishes

Portuguese typical dishes

	The average intake frequency				
Soup	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Portuguese soup with potato and vegetables					
Portuguese soup with meat and potato					
	The average intake frequency				
Main dishes	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Arroz de marisco					
Arroz de lulas					
Bacalhau					
Filetes de Peixe-Espada					
Polvo Grelhado com Batatas					
Salmão Grelhado					
Sardinha assada					
Carne assada					
Feijoada à portuguesa					
Leitão assado					
Coelho estufado					
Rissóis					
Tripas à Moda do Porto					

	The average intake frequency				
Snacks and disserts	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Bolos caseiros					
Pudins caeiros					
Leite creme					
Crepes					

Chinese typical dishes

	Consumption frequency in Portugal				
Soup	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Fish soup					
West lake beef soup					
Soup with crabs and tofu					
Seafood soup					
	Consumption frequency in China				
Soup	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Fish soup					
West lake beef soup					
Soup with crabs and tofu					
Seafood soup					

	Consumption frequency in Portugal				
Cold dishes	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Jellyfish salad					
Vegetable salad					
Wined chicken					
	Consumption frequency in China				
Cold dishes	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Jellyfish salad					
Vegetable salad					
Wined chicken					
	Consumption frequency in Portugal				
Main dishes	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Three knocking shrimp					
West Lake Fish in Sweet Sour Sauce					
Steamed mandarin fish (Sea Bass, Croaker)					
Fresh soup with fish ball					
Wenzhou fish cake					
Dried/ fried Coilia mystus					

Fried <i>Periophthalmus cantonensis</i> with Spiced salt					
Fried Eel Slices					
Barnacles					
Steamed Crab with tofu					
Raw Crab					
Huadio boiled crab					
Stir-fried clams with Chinese chive					
Spicy stir-fried Razor clam					
Steamed scallops with garlic and Fensi					
Stewed duck with Tea and Bamboo shoot					
Stir-fried bamboo shoots					
Stir-fried dried yellow croaker with spinach					
Stir-fried vegetables					
Stir-fried fungus					
Home-style tofu					
Small-dried-shrimps stir - fried vegetables					

	Consumption frequency in China				
Main dishes	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Three knocking shrimp					
West Lake Fish in Sweet Sour Sauce					
Steamed mandarin fish (Sea Bass, Croaker)					
Fresh soup with fish ball					
Wenzhou fish cake					
Dried/ fried <i>Coilia mystus</i>					
Fried <i>Periophthalmus cantonensis</i> with Spiced salt					
Fried Eel Slices					
Barnacles					
Steamed Crab with tofu					
Raw Crab					
Huadiao boiled crab					
Stir-fried clams with Chinese chive					
Spicy stir-fried Razor clam					
Steamed scallops with garlic and Fensi					

Stewed duck with Tea and Bamboo shoot					
Stir-fried bamboo shoots					
Stir-fried dried yellow croaker with spinach					
Stir-fried vegetables					
Stir-fried fungus					
Home-style tofu					
Small-dried-shrimps stir - fried vegetables					
	Consumption frequency in Portugal				
Staple food	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Steamed Rice					
Wenzhou noodles					
Wonton					
Qingtian dumplings					
Tian-fish stir-fry with dry powder					

	Consumption frequency in China				
Staple food	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Steamed Rice					
Wenzhou noodles					
Wonton					
Qingtian dumplings					
Tian-fish stir-fry with dry powder					
	Consumption frequency in Portugal				
Snacks and Desserts	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Qiangtian sugar cake					
Dried squids					
Dried Mustard					
Air-dried bamboo shoot					
Dried Myrica rubra					
Dried fish					
Dried shrimp					
	Consumption frequency in China				
Snacks and Desserts	once or more than once per day	3-6 times per week	1-2 times per week	1-3 times per month	never or less than once per month
Qiangtian sugar cake					
Dried squids					
Dried Mustard					
Air-dried bamboo shoot					
Dried Myrica rubra					
Dried fish					
Dried shrimp					
Thanks for your participation !					

Appendix 1.4 Questionnaires of daily food intake

The purpose of this part of questionnaire: Comparing the daily schedule and diet situation of Chinese emigrants when they lived in China and live in Portugal.

In Portugal

1. What time did you get up yesterday?

_____h_____m

2. What time did you go to bed yesterday?

_____h_____m

3. How many meals did you have yesterday?

4. Next, please try to describe all the things you ate and drank during the day yesterday.

[illegible]

5. The foods and drinks you consumed yesterday were your normal (routine) consumption?

Yes____ No____

5.1 If not, what was the difference?

In China

1. What time do you usually get out of bed when you lived in China?

_____h_____m

2. What time do you usually go to bed in China?

_____h_____m

3. How many meals do you usually have in China?

4. Next, please try to describe the foods you usually consume when you lived in China.

[illegible]

Appendix 2 Questionnaires in Chinese version

Appendix 2.1 Questionnaire of personal characteristics and food habits

个人特征与饮食习惯调查问卷

编号_____

日期: ____/____/2014

第一部分：社会人口特征调查

此部分调查问卷的目的：了解居住在葡萄牙波尔图和里斯本地区的华侨的基本信息，以便了解华侨的个人基本信息，经济和社会地位。

个人基本信息：

1. 性别：男（ ）女（ ）(相应后面打“V”)
2. 年龄：_____
3. 出生地：_____
4. 婚姻状况：____单身 ____已婚 ____离异或分居 ____丧偶
5. 来葡萄牙之前您生活在哪里？

6. 您在波尔图/里斯本居住了多少年？

7. 您在葡萄牙的其他城市生活过吗？
是的_____没有_____
 - 如果有，您在哪里生活过？生活了多久？

8. 您在其他国家（不包括中国和葡萄牙）有生活超过一年吗？如果有，在哪个国家？
是的_____ 没有（ ）
9. 您所获得的最高学历是什么？
 低于初中学历（ ）
 初中学历（ ）
 高中学历（ ）
 本科学历（ ）
 硕士学历（ ）
 博士学历（ ）
10. 您目前所从事的职业是什么？

 - 这个职业和您在中国从事的职业相同吗？
相同（ ）不同（ ）
 - 如果不同，您之前在中国所从事的职业是什么？

 - 是什么原因促使您移居到葡萄牙？

11. 您是独自一个人来葡萄牙的吗？
是（ ）不是（ ）
 - 如果您已婚，您的配偶目前也居住在葡萄牙吗？那么她/他在葡萄牙生活了几年了？

12. 综合考虑各方面因素，您认为自己融入葡萄牙的程度如何？（比如生活环境，当地文化，饮食习惯，等等）（请使用 1 至 5 这个范围来回答这个问题，其中“1”代表“根本没有融入”，“5”代表“完全融入”）

根本没有融入 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 完全融入

13. 您的葡萄牙语语言能力如何？

- ☐ 我完全不会葡萄牙语
- ☐ 我能理解并且会说一些简单的单词
- ☐ 基本上，我可以使用葡萄牙语进行日常交流
- ☐ 我可以掌握并运用葡萄牙语，并且可以和以葡语为母语的人流利的交流
- ☐ 我精通葡语

经济和社会地位：

14. 与您在中国的经济状况相比较，您目前的经济状况是得到改善了还是恶化了？

15. 您有向您在中国的家人或亲戚提供经济上的帮助吗？

16. 在葡萄牙，您拥有属于自己的住房吗？

17. 您对您目前的生活状况满意吗？（包括经济和社会方面）不满意的原因是什么？

18. 总体来讲，您多长时间回一次中国？您上次回国是什么时候？您一般在中国停留多长时间后返回葡萄牙？

19. 您希望回中国永久居住吗？如果希望，您预计什么时候回中国？原因是什么？

第二部分：烹饪和食品消费特征调查

此部分调查问卷的目的：了解居住在葡萄牙的华侨在有关食品消费的态度和习惯方面的情况。

1. 总体来讲，在葡萄牙和中国，您的家中分别主要由谁来负责烹饪？
在葡萄牙： _____
在中国： _____
2. 在葡萄牙和中国，分别主要由谁来购买食材？
在葡萄牙： _____

在中国：_____

3. 在葡萄牙，您通常选择一下哪个（些）地方或方式获取食材？

- ☐ 超级市场(比如Froiz)
☐ 大规模超级市场（比如Continente）
☐ 小型市场/杂货店/特种商品商店
☐ 集市
☐ 民族商店（中国超市/商店）
☐ 直接从生产商处获得
☐ 直接从自家田地获得

4. 在中国，您通常选择一下哪个（些）地方或方式获取食材？

- ☐ 超级市场
☐ 大规模超级市
☐ 小型市场/杂货店/特种商品商店
☐ 集市
☐ 直接从生产商处获得
☐ 直接从自家田地获得

5. 一般来讲，您通常花费多长时间来准备一顿正餐？（包括早餐、午餐和晚餐）

6. 您喜欢食用即食或预先烹饪好的食物吗？您经常购买它们吗？如果您经常购买，平均多长时间购买一次？您更偏爱于这类食品中的那个（些）食品？

7. 自从您移居到葡萄牙后，请您从您个人的角度评估一下您本人在饮食习惯方面的改变（意思是指从中国饮食习惯到葡萄牙饮食习惯的改变）程度。
 （请使用 1 至 5 这个范围来回答这个问题，其中“1”代表“根本没有改变”，“5”代表“完全改变”）

根本没有改变 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 完全改变

中国式饮食模式和葡萄牙式饮食模式您更偏爱于哪一个？原因是什么？

8. 从大体上来讲，您平均每周食用几顿中餐？

9. 一般来说，您每月在外就餐几次？您一般会选择什么样的场所就餐？（例如：食堂，餐厅，咖啡厅，等等）通常选择食用哪类食物？（例如：中餐，葡餐，等等）

在葡萄牙传统节日期间（比如圣诞节），您会选择特别的食物来庆祝节日吗？
您比较偏爱于哪些食物？中餐还是葡餐？

10. 在中国的传统节日期间（比如春节），您会选择食用该节日的传统食物来庆祝吗？
-

11. 您喜欢吃**偏咸味**和**偏甜味**的食物吗？自从您移居到葡萄牙后这种口味上的习惯有所改变吗？
-
-

在中国，两餐之间您有吃零食的习惯吗？您一般食用哪些零食？您移居到葡萄牙后，这个习惯有所改变吗，所食用的零食种类有变化吗？

第三部分：健康情况调查

此部分调查问卷的目的：了解葡萄牙华侨的身体健康状况，评估华侨自从移居到葡萄牙后身体健康状况的变化。

1. 您可以描述一下你目前的身体健康状况吗？

☐ 差 ☐ 不太好 ☐ 良好 ☐ 很好

与您在中国居住时的健康状况相比较，现在的身体状况是有所改善还是恶化了？
如果您的健康状况发生了变化，您能简单描述一下吗？

2. 与您在中国相比，您现在的身高和体重较之前有变化吗？什么变化？
-
-

3. 您觉得您在葡萄牙所食用的食物对您的身体健康有影响吗？如果有影响，您能简单说明一下饮食对您的健康造成了怎样的影响吗？
-
-

4. 您居住在中国和葡萄牙时，通常多长时间做一次运动？比较偏爱于哪类体育运动？每次运动多长时间？

在中国：

在葡萄牙：

Appendix 2.2 Food frequency questionnaires

膳食摄取频率问卷 (FFQ)

通过向葡萄牙居住的华人询问在他们对某些特定食物的摄取频率来评估受访者饮食习惯的改变，此问卷涵盖了 9 类食物。

一、谷物类食品（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
白面包					
添加谷物的面包					
中式面条、意大利面、或饼或馒头					
麦片或早餐谷物					
玉面类食品（玉米、玉米粥或玉米面糕点）					
米饭或米粥					
炸薯条或薯片					
煮马铃薯					
谷物类食品（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
白面包					
添加谷物的面包					
中式面条、意大利面、或饼或馒头					
麦片或早餐谷物					
玉面类食品（玉米、玉米粥或玉米面糕点）					
米饭或米粥					
炸薯条或薯片					
煮马铃薯					

二、奶制品（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食品名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
全脂牛奶 (Gordo) 或奶酪					
低脂或半脂 (Meio Gordo) 牛奶 (2%)					
脱脂牛奶					
酸奶					
带风味的酸奶					
奶制品（以前，在中国生活时的食用频率）					
	平均摄入次数				
食品名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
全脂牛奶 (Gordo) 或奶酪					
低脂或半脂 (Meio Gordo) 牛奶 (2%)					
脱脂牛奶					
酸奶					
带风味的酸奶					
三、蛋、肉、鱼类食品（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食品名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
煮鸡蛋					
煎鸡蛋					
红肉（猪肉、牛肉、羊肉、兔肉 等等）					
白肉（鸡肉，鸭肉，鹅肉，火鸡 等等）					
动物内脏					
香肠					
鱼（包括浸在水中的鱼罐头）					
贝壳或其他类海鲜（包括虾）					
蛋、肉、鱼类食品（以前，在中国生活时的食用频率）					
	平均摄入次数				
食品名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
煮鸡蛋					
煎鸡蛋					
红肉（猪肉、牛肉、羊肉、兔肉 等等）					

白肉（鸡肉，鸭肉，鹅肉，火鸡等等）					
动物内脏					
香肠					
鱼（包括浸在水中的鱼罐头）					
贝壳或其他类海鲜（包括虾）					
四、油和脂肪类食品（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
橄榄油					
其他油脂（花生油、 豆油、菜籽油）					
黄油					
油和脂肪类食品（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
橄榄油					
其他油脂（花生油、 豆油、菜籽油）					
黄油					
五、蔬菜类食品（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
叶菜类（菠菜、生菜、白菜等 等）					
洋葱和大蒜					
瓜类蔬菜（黄瓜、丝瓜、南瓜、 冬瓜、苦瓜等等）					
茄类蔬菜（番茄、青椒、辣椒、 茄子等等）					
块茎类蔬菜（红薯、山药、芋头 等等）					
根茎类蔬菜（萝卜、胡萝卜等 等）					
豆类（豌豆、绿豆、黄豆、扁豆 等等）					
食用菌类（蘑菇、木耳等等）					
水生类（莲藕、荸荠、水芹等 等）					
海生蔬菜（紫菜、海带等等）					
西兰花或菜花					
橄榄果					

蔬菜类食品（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
叶菜类（菠菜、生菜、白菜等等）					
洋葱和大蒜					
瓜类蔬菜（黄瓜、丝瓜、南瓜、冬瓜、苦瓜等等）					
茄类蔬菜（番茄、青椒、辣椒、茄子等等）					
块茎类蔬菜（红薯、山药、芋头等等）					
根茎类蔬菜（萝卜、胡萝卜等等）					
豆类（豌豆、绿豆、黄豆、扁豆等等）					
食用菌类（蘑菇、木耳等等）					
水生类（莲藕、荸荠、水芹等等）					
海生蔬菜（紫菜、海带等等）					
西兰花或菜花					
橄榄果					
六、水果类（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
苹果					
梨					
香蕉					
桃子（季节性）					
橙子					
西瓜或甜瓜（季节性）					
葡萄					
猕猴桃					
荔枝（季节性）					
火龙果					
椰子					
菠萝					
樱桃（季节性）					
枣					
草莓					
蓝莓					
李子					
橘子					
榴莲					

柚子					
柠檬					
芒果					
其他类水果					
干果					
水果类（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
苹果					
梨					
香蕉					
桃子（季节性）					
橙子					
西瓜或甜瓜（季节性）					
葡萄					
猕猴桃					
荔枝（季节性）					
火龙果					
椰子					
菠萝					
樱桃（季节性）					
枣					
草莓					
蓝莓					
李子					
橘子					
榴莲					
柚子					
柠檬					
芒果					
其他类水果					
干果					
七、甜食与蛋糕类（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
饼干					
巧克力（棒、粉或巧克力甜品）					
牛奶类甜品（比如布丁，等等）					
果酱					
蜂蜜					
糖果					
冰淇淋（季节性）					

甜食与蛋糕类（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
饼干					
巧克力（棒、粉或巧克力甜品）					
牛奶类甜品（比如布丁，等等）					
果酱					
蜂蜜					
糖果					
冰淇淋（季节性）					
八、饮料类（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
水					
带气的水					
咖啡					
豆浆					
茶					
碳酸饮料（可乐、七喜等等）					
天然果汁（鲜榨或纯果汁类饮料）					
啤酒					
红酒					
白葡萄酒					
波特酒					
威士忌，伏特加					
其他类饮料					
在饮料类中”水“的摄入情况一项中，如果以500毫升/瓶的矿泉水为单位，在葡萄牙生活时您每日大概饮用_____瓶？					
饮料类（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
水					
带气的水					
咖啡					
豆浆					
茶					
碳酸饮料（可乐、七喜等等）					
天然果汁（鲜榨或纯果汁类饮料）					
啤酒					
红酒					
白葡萄酒					

波特酒					
威士忌，伏特加					
其他类饮料					
在饮料类中”水“的摄入情况一项中，如果以500毫升/瓶的矿泉水为单位，在中国生活时您每日大概饮用_____瓶？					
九、快餐类（在葡萄牙这边生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
汉堡包					
比萨					
其他					
快餐类（以前，在中国生活时的食用频率）					
	平均摄入次数				
食物名称	每天1或 多于1次	每周3-6 次	每周1-2 次	每月1-3 次	从不摄入 或每月少 于1次
汉堡包					
比萨					
其他					
非常感谢您的支持与配合！					

Appendix 2.3 Questionnaires of consumption frequency of Portuguese and Chinese typical dishes

葡式菜肴食用频率					
汤类	食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
葡式土豆蔬菜汤					
葡式土豆肉汤					
主菜类	食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
Arroz de marisco (海鲜饭)					
Arroz de lulas (鱿鱼饭)					
Bacalhau (鳕鱼)					
Filetes de Peixe-Espada (炸剑鱼片)					
Polvo Grelhado com Batatas (烤章鱼配土豆)					
Salmão Grelhado (烤三文鱼)					
Sardinha assada: (烤沙丁鱼)					
Carne assada (烤肉)					
Feijoada à portuguesa (葡萄牙乱炖)					
Leitão assado (烤乳猪)					
Coelho estufado (炖兔肉)					
Rissóis (小馅饼)					
Tripas à Moda do Porto (波尔图式炖猪肚)					

小吃和甜品类	食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
Bolos caseiros (自制蛋糕)					
Pudins caeiros (自制布丁)					
Leite creme (牛奶甜品)					
Crepes (可丽薄饼)					
中式菜肴食用频率 (主要集中在浙江省)					
汤类	在葡萄牙食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
鱼汤					
西湖牛肉羹					
豆腐蟹汤					
海鲜汤					
汤类	在中国食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
鱼汤					
西湖牛肉羹					
豆腐蟹汤					
海鲜汤					
凉菜类	在葡萄牙食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
凉拌海蜇					
凉拌蔬菜					
醉鸡					
凉菜类	在中国食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
凉拌海蜇					
凉拌蔬菜					
醉鸡					
主菜类	在葡萄牙食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
三片敲虾					
西湖醋鱼					
清蒸鱼 (鳊鱼、石斑鱼、黄花鱼)					

清汤鱼丸					
温州鱼饼					
炸凤尾鱼或凤尾鱼干					
椒盐跳鱼					
炒鳝鱼					
螺蛳					
梭子蟹蒸豆腐					
江蟹生					
花雕煮蛏蜆（青蟹）					
韭菜炒蛤蜊					
辣炒蛏子					
蒜蓉粉丝蒸扇贝					
茶笋老鸭煲					
鲜油焖笋					
干黄鱼鲞炒菠菜					
炒蔬菜					
炒木耳（蘑菇）					
家常豆腐					
小虾米炒菜					
主菜类	在中国食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
三片敲虾					
西湖醋鱼					
清蒸鱼（鳊鱼、石斑鱼、黄花鱼）					
清汤鱼丸					
温州鱼饼					
炸凤尾鱼或凤尾鱼干					
椒盐跳鱼					
炒鳝鱼					
螺蛳					
梭子蟹蒸豆腐					
江蟹生					
花雕煮蛏蜆（青蟹）					
韭菜炒蛤蜊					
辣炒蛏子					
蒜蓉粉丝蒸扇贝					
茶笋老鸭煲					
鲜油焖笋					
干黄鱼鲞炒菠菜					
炒蔬菜					
炒木耳（蘑菇）					
家常豆腐					
小虾米炒菜					

主食类	在葡萄牙食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
米饭					
温州拌面					
馄饨					
青田山粉饺					
田鱼干炒粉干					
主食类	在中国食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
米饭					
温州拌面					
馄饨					
青田山粉饺					
田鱼干炒粉干					
小吃和甜品类	在葡萄牙食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
青田糖糕					
鱿鱼干					
梅干菜干					
笋干					
杨梅干					
鱼干					
虾干					
小吃和甜品类	在中国食用频率				
	每天1或多于1次	每周3-6次	每周1-2次	每月1-3次	从不摄入或每月少于1次
青田糖糕					
鱿鱼干					
梅干菜干					
笋干					
杨梅干					
鱼干					
虾干					
非常感谢您的支持与配合！					

Appendix 2.4 Questionnaires of daily food intake

日常食物摄入调查问卷

此部分调查问卷的目的：对比分析华人分别在中国和在葡萄牙生活时的作息与饮食情况的变化。

请您努力回忆一下过去 24 小时内的作息时间和食物摄入情况，并将它们尽可能详细的记录在下表中。

- “时间”一栏可以仅在每一餐中填写的第一种食物旁注明。”食物或饮料的详细描述“，举例：咖啡中有加奶；面包是全谷物面包，等等。

[illegible]

5. 您昨天的作息时间和所食用的食物、饮料符合您平日的正常或常规作息和饮食习惯吗? 符合_____ 不符合_____

5.1 如果不符合，有哪些不同？

中国篇

请您努力回想一下，当您居住在中国时，每日的正常作息时间和每日正常的食物摄入情况，并把它们尽可能准确、详细的记录在下表中。

1. 在中国，您一般几点起床？

_____时_____分

2. 在中国您一般几点睡觉?

_____时_____分

3. 在中国，您每日一般习惯吃几餐？

4. 请您努力回想一下您在中国生活时每日正常情况下摄入的食物（包括饮料），并将它们记录在下表中。

[illegible]

非常感谢您的支持与配合!

Appendix 3 Glossary of Typical Portuguese and Chinese Cuisine

Soup:

Portuguese:

Sopa de carne com batatas:

The soup is made with water of meat, onion, potato, olive oil and salt.



Sopa de legumes e batatas:

The soup is made with 4 medium potatoes, 2 medium carrots, 1 beet, 1 tomato, 1 onion, 2 bouillon and 1 liter of water.



Chinese:

Fish soup:

The inshore fish is always selected as the main material of this dish, like fresh croaker. After remove the head, tail and skin of the fish, knock the fish with mallet slowly into thin fillets. Boiled them with water and add some shredded chicken, ham, mushroom, and cabbage.



West lake beef soup:

The soup is made with beef, tofu, mushrooms, ground pepper, parsley, sesame oil, egg whites, and starch.



Soup with crabs and tofu:

Main materials are crabs and tofu, and flavored by chopped fistular onion, parsley, ginger, cooking wine, sugar and vegetable oil.



Seafood soup:

Several kinds of seafood (clam, shrimp, etc.) boiled with water, and accompanied with vegetables, such as carrot, or add some tofu, depend on personal preference, small amount of salt and ginger.



Cold dish:

Chinese:

Jellyfish salad:

Mix the jellyfish with cucumber, salt, sesame oil, chili oil, vinegar and sugar.



Vegetable Salad:

Mix the various vegetables.



Wined chicken:

Boiled chicken with Chinese yellow rice wine. And cool down in refrigerator.



Main dish:

Portuguese:

Arroz de marisco:

Rice with seafood.



Arroz de lulas:

Boil the squid with onion, tomato pulp, garlic and white wine.



Bacalhau cozido:

Boiled codfish, accompanied with eggs and cabbages. This is a very typical and traditional Portuguese dish, especially for some festival, like Christmas day.



Bacalhau à Brás:

Desalted codfish with potatoes, eggs, peppers, onions, garlicks and olive oil.



Bacalhau à Braga:

Codfish with onion, pepper and special sauce, accompanied with potato chips.



Bolinhos de Bacalhau:

Codfish ball. Fried desalted codfish and potatoes.



Filetes de Peixe-Espada:

Fried fillets of swordfish, flour and eggs, accompanied with lemon and olives.



Polvo Grelhado com Batatas:

Grilled octopus with potatoes.



Salmão Grelhado:

Grilled Salmon with and lime juice.



Sardinha assada:

Grilled sardine.



Carne assada:

Roasted meat, pork or beef.



Feijoada à portuguesa:

Stewed pork, sausages with beans.



Leitão assado:

Roasted suckling pig, accompanied with fried chips and fresh vegetables.



Coelho estufado:

Stewed rabbit.



Rissóis:

Fried fish, meat, shrimp or other seafoods.



Tripas à Moda do Porto:

Stewed tripe of pork and beans.



Chinese:

Three knocking shrimp:

Fresh shrimps were selected as the major ingredients, cooked ham, cooked chicken breast, mushrooms, and green vegetable are auxiliary materials, and add some chicken soup, yellow rice wine, salt, and dry starch as condiments.



West Lake Fish in Sweet Sour Sauce:

The fresh grass carp from the West Lake (the most famous lake in Hangchow) mixed with the special sweet and sour sauce, this kind of sauce is made with the local vinegar, wine, soy sauce and sugar.



Steamed mandarin fish (Sea Bass, Croaker):

Steam the fish with fistular onion, ginger, soy sauce, salt, and cooking wine or yellow rice wine.



Steamed mandarin fish



Steamed Sea Bass



Steamed Croaker

Fresh soup with fish ball:

Mix the cubes of deep-sea fish, fat meat, sweet potato flour and glutinous rice, made them into a shape of ball, boiled the fish ball with water, and add some chopped fistular onion, ground pepper, vinegar or some green vegetables.



Wenzhou fish cake:

The production process is similar to the dish of fish ball that mentioned above, but it need to be fried after the steam.



Dried/ fried Coilia mystus:

Semi dried fish served with fennel, pepper, tea and sugar, and refined into dried fish.

Fry the dried fish with oil and salt.



Dried Coilia mystus



Fried Coilia mystus

Fried Periophthalmus cantonensis with Spiced salt:

Fried the fish with flour, anise powder, spiced salt, white pepper powder, chopped fistular onion, and ginger.



Fried Eel Slices:

Stir-fry eel slices with green pepper and onion.



Barnacles:

Stir-fry barnacles with oil, cooking wine, soy sauce, salt, sugar, chopped fistular onion, garlic, ginger and some hot pepper.



Steamed Crab with tofu:

Steam the crab with fresh tofu, and add some soy sauce and ginger.

Raw Crab:

Raw crab with homemade sauce. The sauce is made with fistular onion, ginger, garlic, vinegar, sugar, monosodium glutamate and pepper.



Steamed crab with tofu



Raw crab

Huadiao boiled crab:

Boil crab with Huadiao wine. Huadiao is a kind of Chinese yellow rice wine.



Stir-fried clams with Chinese chive:

Boil clams in water, and stir-fry them with Chinese chive, accompanied by salt and hot pepper.



Spicy stir-fried Razor clam:

Stir-fry razor clam with hot pepper, oil, cooking wine, salt, garlic and fistular onion.



Steamed scallops with garlic and Fensi:

Fensi is a kind of noodle made with rice. Steam the scallops with garlic and Fensi, and accompanied by chopped fistular onion and salt.



Stewed duck with Tea and Bamboo shoot:

Stew duck with tea, bamboo shoot, fistular onion and ginger. In general, it needs to cook for several hours.



Stir-fried bamboo shoots:

Stir-fry bamboo shoots with salt, sugar and soy sauce.



Stir-fried dried yellow croaker with spinach:



Stir-fried vegetables:

Stir-fry vegetables with salt and oil.



Stir-fried fungus:

Stir-fry fungus with onions, salt and oil.



Home-style tofu:

This dish is made with fried tofu, green pepper, red pepper, eggs, chili, water starch, soy sauce, sugar and water.



Small-dried-shrimps stir - fried vegetables:

Stir-fry vegetables with small-dried-shrimps, salt and oil.



Staple food:

Steamed Rice:



Wenzhou noodles:

Handmade noodles made with wheat and flour and served with lard, minced meat, Monosodium Glutamate, salt, soy sauce, vinegar, and chopped fistular onion, and then put the eggs on the top of noodles.



Wonton:

The surface skin of the food is made with water and flour, and the stuffing inside the skin was made with meat, vegetables, salt, oil, chopped fistular onion, ginger and garlic, finally, boiled them with water, served with salt, sesame oil, and nori.



Qingtian dumplings:

Cooked taro mix with sweat potato, this mixture served as the dumpling skin, and the mixture of shredded turnip, shrimp, diced meat, chopped fistular onion, bamboo shoots, and tofu served as the stuffing of dumpling.



Tian-fish stir-fry with dry powder:

Tian-fish is a kind of carp which distribute in freshwater of Qingtian County. Fengan is a kind of noodle which made with rice. Fengan stir-fry with Tian-fish, and accompanied by carrot, green vegetable and eggs. It is a very typical dish of Qingtian County.



Snacks and desserts:

Portuguese:

Bolos caseiros:

Homemade cakes.



Pudins caeiros:

Homemade puddings.



Leite creme:

Milk and sugar based dessert.



Pão-de-ló:

Simple cake, made with flour and sugar.



Crepes:

Thin pancake, made with flour, eggs and milk, can also be added with sugar, chocolate or other ingredients.



Chinese:

Qiangtian sugar cake:

It is a very typical dessert in Qingtian County. It is made with glutinous rice flour and sugar, can also add some peanuts, red beans, red dates and sweet-scented osmanthus, all depends on the personal preference.



Dried squids:



Dried mustard:



Air-dried bamboo shoot:



Dried Myrica rubra:

Dried myrica rubra served with sugar.



Dried fish:



Dried shrimp:



- **Note:** The fistular onion mentioned above is a kind of Chinese onion.

